

**IDRC Consultancy Contract 98-0201 / R# 04229.
(Investor Sentiment and the 1994 Mexican Currency Crisis)**

Final Report

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1. For the preparation of the document "Investor Sentiment and the 1994 Mexican Currency Crisis", I reviewed the following main sources of information: (a) official documents from the Mexican government, which presented antecedents, contents and goals of the economic policies applied in the country since the late 1980s; (b) speeches by top government officials reflecting their views on critical issues concerning the topic under research; (c) publications from the Executive and the staff of the IMF, concerning aspects of interest to the research; (d) published analyses and opinions by the private sector, particularly in the financial sector; (e) official data from Banco de México, Secretaría de Hacienda y Crédito Público (SHCP), and Instituto Nacional de Estadística, Geografía e Informática (INEGI); and (f) academic papers in professional journals. Critically, in all cases [except (e) and (f)] attention was paid to views expressed at the time events under study were unfolding.

2. I presented a preliminary version of the document at the *Trade and Industrial Policy Secretariat* Annual Forum, in Muldersdrift, South Africa, September 1999.

3. The anticipated meetings of the project "Assessing Investor Sentiment" have not so far been carried out, and thus it was not possible to benefit from a direct exchange of ideas with researchers studying the 1997 East Asia financial crises. However, I would like to mention my willingness to attend future meetings of the project and after that make any necessary changes that may improve the final document which I am submitting.

Investor Sentiment and the 1994 Mexican Currency Crisis

Abstract

This document describes the views from the Mexican government, the IMF and private investors before, during and immediately after the 1994 currency crisis in Mexico. It characterizes the dramatic turnabout in investor sentiment in the early nineties, and speculates about its relationship with the economic policies followed by the Mexican authorities. It shows that developments which later on have generally been regarded as determinants of the crisis and for which there was available information, were in the early nineties not considered as troublesome. It studies the evolution of expectations among investors before the peso devaluation of December 1994, and its relationship with observed capital inflows, portfolio recompositions and interest rate differentials. It argues that the eventual stabilization of the domestic financial markets after weeks of severe turmoil following the devaluation required both a strong tightening of fiscal and monetary policies and international financial support.

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Introduction

The years leading up to the currency crisis of December 1994 in Mexico represent a remarkable period in the country's recent economic history, a period characterized by important changes in both macroeconomic performance and the orientation of the government's economic policies. With the antecedent of several years of high inflation and depressed levels of economic activity, the eighties ended after the launch of a new stabilization program which was based on an explicit incomes policy anchored by the nominal exchange rate. The strategy resulted in a process of disinflation which was quite intense in its initial stage, and was accompanied by a resumption of output growth. Over time, however, the basic elements of what some authors have called the Mexican disease developed: these included massive inflows of portfolio investment, a boom in bank lending and private consumption, a steady process of real currency appreciation and rising current account deficits, and falling GDP growth rates. Remarkably, despite these problems external capital kept flowing into the country right up to the peso devaluation of December 1994.

Short term macroeconomic management during the Salinas administration (1989-1994) was guided by the ultimate goal of bringing domestic inflation down to international levels. In such context, the pace of depreciation of the nominal exchange rate was consistently set below the Mexican-U.S. inflation differential. Thus there was purposeful real currency appreciation. Fiscal and monetary policies were defined in accordance with the disinflationary goal. There was a steady improvement in the government fiscal position, which for the first time in recent history reached an overall surplus. Fiscal adjustment was helped by the successful conclusion, in the late eighties, of the renegotiation of the country's commercial bank debt, and by a program of privatization of public assets which gained force in the early nineties. An improvement in private expectations contributed to establishing a virtuous circle, in that a fall in domestic

interest rates tended to strengthen the government finances, which in turn reinforced policy credibility.

A program of structural reform, aimed at reducing the government's role in the economy, also played a significant role. Basic ingredients were the privatization of public assets and the deregulation of markets, notably in the financial and external sectors. The process of trade liberalization, in particular, culminated with the signature of the North American Free Trade Agreement (NAFTA) by Canada, Mexico and the U.S. in December 1992, and ratified by the U.S. Congress in November 1993.

There was a broad coincidence between the policies followed by the Mexican authorities and those recommended by the International Monetary Fund. At the same time, there was a steady improvement in the market assessment of the country's outlook. Overnight, the terms of funding turned more favorable and Mexico became the main recipient of financial flows in the developing world. The announced exchange rate policy became increasingly credible among market participants, leading to a situation of full credibility by mid 1993. Not surprisingly, both the Mexican government and the IMF attributed the improvement in market sentiment to the policies being implemented.

Despite the overall match between the policies of the Mexican government and those advised by the IMF, there were some developments which, from the Fund's standpoint, clearly should have been regarded as troublesome. In particular, in the period before the crisis the peso had been appreciating in real terms; a rising current account deficit was a reflection more of a fall in the domestic saving rate than of higher investment rates; and the Fund was well aware that a strategy of financial liberalization followed by a boom in bank lending, as seen in Mexico at the time, had led in recent past to banking crises in a number of developed countries. In all cases information was readily available that showed the country's actual situation. Nonetheless, the

IMF consistently praised the Mexican authorities for their policies. Moreover, investors were mostly willing to commit large amounts of money into Mexican assets. It seems as if, in shaping their views, both investors and the IMF were impressed more by the type of policies being followed than by their actual results.

Developments in the final months of 1994, before the outbreak of the financial panic, are worth looking at. On one side, there were positive assessments of the Mexican situation being issued by investment firms, and there was significant foreign investment in peso-denominated assets -- albeit at a reduced scale compared to 1993-- at least up to the third quarter of the year. On the other, there was a steady shift of investors holding domestic government debt, from peso-denominated cetes to dollar-indexed tesobonos, a sign that exchange rate policy was losing credibility. These contrasting observations suggest that before the crisis there was, as some have argued, a segmentation of views among investors; since these developments took place in the market for very liquid debt, the segmentation concerned mainly expectations about the country's short term outlook. In fact, foreign *direct* (as opposed to portfolio) investment was left untouched by the crisis.

On 20 December 1994, the ceiling of the peso's exchange band against the U.S. dollar was devalued 15%, presumably in an attempt to reestablish a more equilibrated value for the real exchange rate. The measure, however, was followed by strong speculation against the currency, forcing the central bank to withdraw from the foreign exchange market and opening a period of rapid currency depreciation. In this light, the question naturally arises of why market participants reacted so violently to the initial devaluation: if they were initially concerned about the real currency appreciation and its consequences, then the realignment should have eased those concerns; if they were instead impressed by the long term prospects opened by the program of structural reform, then their behavior should not have been so sensitive to a mere

15% variation in nominal parity. Was this an irrational reaction, or were there underlying fundamentals justifying a run?

We approach these issues in the following way. Section 1 sets the macroeconomic background, by reviewing some basic indicators of Mexico's economic performance in the early nineties. Section 2 describes the crisis triggered by the peso devaluation. Sections 3 and 4 examine the views from the Mexican government and the IMF on a number of critical issues, including the behavior of the real exchange, the rising current account deficits and the bank lending boom. Section 5 takes a first look at the way market sentiment evolved during the period, while section 6 endeavors to understand how investor sentiment was shaped by different types of shocks. Finally, section 7 presents the conclusions.

1. Macroeconomic background

For Mexico, most of the eighties were a period of negative capital inflows and stagnation. In particular, during 1983-1987 the cumulative current account deficit was *minus* \$13.4 billion and the average annual GDP growth rate was only 0.02%. The macroeconomic situation was complicated by the dramatic fall of oil prices in export markets during 1986, which led to an overall fiscal deficit of 12.8% of GDP in 1988 and a rise in the annual inflation rate from less than 60% at the end of 1985 to a 178% peak in February 1988.

Two events defined a turning point late in the decade. First was the introduction, in December 1987, of a new stabilization program centered on the incomes-policy agreements known as pacts. Exchange rate policy played a key role; its specific form, though, changed over time: while in a first stage the peso's nominal value against the U.S. dollar was strictly fixed, a crawling peg was introduced in January 1989, and then an explicit band with a gliding ceiling

and a fixed floor in November 1991. The daily crawl was 0.02 peso cents from 11 November 1991 through 19 October 1992, and then 0.04 cents until the December 1994 devaluation (for a detailed, pre-crisis account, see Schwartz 1994).

The new program was clearly successful, in that the high inflation rates of the late 1980s subsided rapidly: the country moved from having an annual CPI inflation rate of 178% in February 1988, to 35% in January 1989, and a record low of 20% in December of that year. Thus, disinflation was particularly intense in the initial months. The pace was much slower afterwards, and it was only in November 1993 that the country reached single-digit rates (9.9%).

A second positive shock came in mid 1989, with the conclusion of renegotiations of the country's commercial bank debt. This contributed to the remarkable fall in the ratio of public external debt to GDP registered during the first years of the nineties. As will be seen, there is evidence that the renegotiation was one factor behind the change in international investor sentiment toward Mexico early in the decade. Both the debt renegotiation and the improvement in private expectations helped the process of fiscal adjustment carried out by the Salinas government.

The basic purpose of macroeconomic management during the administration of President Salinas was to eventually bring domestic inflation down to international levels. There was a steady improvement in the fiscal accounts, and monetary policy was consistent with a stable nominal exchange rate. In 1988 there was an overall fiscal deficit equivalent to 13 GDP points, despite a primary surplus of 8% of aggregate output. Two years later, the overall deficit was only 3.9% GDP points. For 1991 and 1992, there was an average surplus of 2.75% of GDP (excluding the revenue from privatization of public assets yields a figure of *minus* 0.5). During 1993 and 1994, there was a reduction in the primary surplus, but nonetheless the overall balance remained at 1% and *minus* 0.3%, respectively. The fiscal accounts greatly benefited from a fall in

domestic interest rates: the annual 28-day cete (treasury bill) rate descended from a 157% peak in January 1988 (immediately after the new stabilization program was launched) to less than 15% before the December 1994 devaluation. Meanwhile, domestic public debt declined from 19% of GDP in 1988 to 7.6% in 1993, while foreign debt did it from 44% to 14.3% (Dornbusch and Werner 1994).

Throughout the period, and despite the introduction of an explicit target zone with a depreciating ceiling, the nominal exchange rate was relatively stable. In December 1987, the average interbank buy exchange rate was 2.25 pesos per dollar; by December 1990, the parity had increased to 2.94, a proportional variation which was well below the cumulative home-foreign inflation differential. For the next three years, the parity remained without much change, ending in December 1993 at 3.1 pesos per dollar. Naturally, in the context of a large inflation differential between Mexico and the U.S., there was a steady appreciation of the real exchange rate.

The extent of real appreciation can be determined by a comparison of dollar unit labor costs in the manufactures in Mexico and the U.S. According to estimates from the National Institute of Statistics (INEGI), the Mexican unit labor cost increased 37% between 1990 and 1993, while the U.S. counterpart remained constant (figure 1). This increase took place despite an 18% rise in labor productivity in Mexico; the reason, of course, was the marked rise in the Mexican nominal wage, measured in foreign currency, which shifted from 3.06 dollars per hour in 1990 to 4.9 in 1993.

The goals of the disinflationary strategy, and its relation to the exchange rate policy of the period, are captured in the so-called Criteria for Economic Policy, submitted annually to Congress by the Executive, and which set up the basic antecedents, goals and assumptions for policy in the following year. This source shows that in the early 1990s, the announced rate of

exchange rate depreciation was consistently below the government inflation rate target for the following months. Thus there was purposeful appreciation, even under the assumption that the inflation target were met, instead of below the actual rates as was in fact the case. For instance, in the Criteria for 1992, submitted in late 1991, the inflation target was just below 10%; in contrast, the daily crawl of 0.02 peso cents in the exchange rate band ceiling announced for 1992, implied a central parity depreciation of only 1.4% (the actual peso depreciation was 1.0%).

Similarly, the Criteria for 1993 and 1994 set inflation targets of 7 and 5%, respectively, whereas the implicit central parity depreciation, given an announced daily crawl of 0.04 in the band ceiling, was 2.4 and 2.2%, respectively (the actual exchange rate basically remained unchanged during 1993, and suffered a depreciation of 11.4% the following year --up to the devaluation-- as a result of the exchange rate having shifted to the band's upper limit after the assassination of presidential candidate L. D. Colosio in March 1994). In fact, during 1992 and 1993 the actual rate depreciated less than the central parity; the reason, according to some authors, was that the central bank consistently intervened to keep the rate in the strong half of the band (Schwartz 1994).

As a result of this strategy, the Mexican economy began 1994 with single-digit inflation rates and a real exchange rate that had clearly appreciated with respect to its equilibrium level. In this sense, the decision to sustain the disinflationary effort led to an increasingly risky situation. The outlook for 1994 included, besides a clear tendency toward economic stagnation, a domestic inflation rate which presumably was close to its absolute minimum and thus raised doubts about the need to stick with a disinflationary parity, and a change of administration scheduled for December.

More specifically, the successful stabilization of the economy had led to a resumption of growth, with an annual GDP growth rate of 3.03% for 1988-90, well above the 0.02% registered

in the previous five years. However, growth rates declined over time, and by 1993 the economy was practically stagnant. In particular, the GDP growth rate fell steadily from 4.5% in 1990 to less than 0.7% in 1993. In the external sector, the current account deficit increased from \$6 billion in 1989 to \$23 billion in 1993 and nearly \$29 billion in 1994 (equivalent to 7.9% of GDP). Clearly the current account deterioration cannot be attributed to anything resembling strong economic expansion (except perhaps the additional rise in 1994, when the GDP growth rate shifted to 3.5%, supported by a reduction in the government primary balance from 4 to 2.3 GDP points).

The rising current account deficit was mostly associated with a fall in the domestic saving rate. According to some estimates, out of the 7 GDP point rise in the average current account deficit between 1985-89 and 1994, 3 points had as counterpart a higher investment rate and the remaining 4 points a lower saving rate (Lustig and Ros 1997). Given the fiscal adjustment occurred during the period, this means that the fall in private domestic saving was even stronger. The consumption boom was accompanied by a rapid growth in bank lending. Between 1989 and 1994, total lending from commercial banks rose from 28% of GDP to more than 50%. And as we will see, simultaneously there were massive capital inflows, which generated a surplus in the capital account of the balance of payments as the counterpart to the current account deficit.

In summary, the picture that emerges is one of low and declining economic growth caused at least in part by the appreciation of the currency; and record high current account deficits, financed by massive capital inflows, and related in part to higher investment but mainly to a boom in domestic lending and consumption that reduced the private saving rate.

2. The crisis

On 20 December 1994, the Mexican government announced a devaluation in the ceiling of the peso's exchange rate band, which resulted in an immediate depreciation of about 15% in the actual peso-dollar parity. The realignment became a critical point in the country's recent history. As was just described, the previous years had been a period of sustained real currency appreciation, in the context of an exchange rate based disinflationary program. The continuous rise of domestic wages measured in U.S. dollars had been accompanied by a combination of declining GDP growth rates and steeply rising current account deficits. In the course of 1994 there had been two major speculative attacks against the peso, that had seriously eroded the Banco de México's stock of international reserves. Typically, at the time of devaluation reserves were falling. With these antecedents, authorities were probably expecting a positive market reaction to the revision in exchange rate policy: in the short run, the parity change would lessen perceptions of currency misalignment, putting downward pressure on peso interest rates and stopping the reserve drain, while over a longer period it would lead to a reduction in the trade deficit, slowing down the pace of foreign debt accumulation and promoting domestic output growth.

Quite to the contrary, though, the devaluation opened a period of severe financial turbulence that lasted for several months and eventually resulted in the deepest depression the country has experienced in decades. The basic facts of the crisis are well known^{1}: the exchange rate suffered a massive depreciation, shifting from about 3.5 pesos per dollar before the devaluation to 7.3 in the first days of March 1995; meanwhile, the annual interest rate on short-term peso treasury bills rose from a 14% pre-devaluation level to a monthly average of 75% in April. Not surprisingly, financial chaos coupled with the program of fiscal and monetary tightening applied by the government to face it, resulted in severe output contraction --with GDP falling

6.2% during 1995--, a banking crisis that forced the government to bail out a number of banks, and plummeting employment and real wage levels.

The speculative attacks of 1994 in Mexico were preceded by a remarkably good record in terms of international capital flows and the credibility of the government's exchange rate policy. As a result of heavy capital inflows registered in the first years of the decade, the central bank's holdings of foreign exchange reserves rose from about \$10 billion in December 1990 to nearly \$30 billion in February 1994. Meanwhile, the expected peso depreciation, in excess of the announced crawl of the official exchange rate band ceiling, steadily declined from 10% per year in late 1992 to *minus* 8% in the first weeks of March 1994 (see section 5).

This positive trend was interrupted by the assassination of the ruling party's presidential candidate, L. D. Colosio, on 23 March 1994. The political shock produced an erosion in the central bank's stock of international reserves, which fell from more than \$28 billion in late March to less than \$18 by mid April. This decline was a reflection of a rapid shift from peso- to dollar-denominated assets in the private sector. Indeed, a comparison of end of month figures shows a fall of nearly \$13 billion in private holdings of domestic bonds between February and April, which is close to the \$11.5 billion reserve loss registered during the same period. The portfolio recomposition consisted of a fall of more than \$19.5 billion in holdings of peso-denominated treasury bills (mainly cetes), that more than offset a \$7 billion rise in dollar-indexed tesobonos (figure 2).

A second speculative wave began about six months later, extending from early November until the peso devaluation. This time, central bank reserves declined from \$17 billion to less than \$11 and, in contrast to March's attack, private holdings of domestic bonds did not fall. In fact, there was a net \$4 billion rise driven by tesobonos, which suggests that the reserve loss was financed by liquid peso holdings. For our present purposes, the most important observation is that the

attacks before the devaluation were directed against peso-denominated assets; i.e., that they were induced by currency risk or the expectation that there could be a discrete devaluation in the exchange rate.

A third speculative attack came immediately after the devaluation announcement. The renewed turmoil was evident first of all in an exacerbation of the excess demand for dollars: in a few hours, the country lost nearly half of its remaining \$10.6 billion in international reserves, which prompted the Banco de México to withdraw from the foreign exchange market and let the peso float. A period of substantial depreciation followed: the dollar parity moved from about 4 pesos following the realignment to more than 7 pesos within little more than two months.

One can ask what was the factor behind this negative market reaction to the devaluation. It seems difficult to argue that concerns about the size of nominal devaluation or its inflationary impact were the driving force. This conclusion is supported by a number of indicators. Consider first the country's macroeconomic situation in late 1994. Not only was by then the annual inflation rate quite low (about 7%), but in addition there were no signs of over-heating (the average GDP growth rate for 1993-94 was 2.2%), and there was fiscal equilibrium. Thus there was no basis for expecting that a 15% exchange rate realignment would by itself cause a surge in domestic inflation, which could lead to a vicious circle of high inflation and devaluation.

Moreover, before the devaluation real exchange rate depreciation expectations were quite moderate. To see this, consider the following open interest parity condition, which states that the expected peso return on dollar-indexed tesobonos and CPI-indexed ajustabonos must be equal, i.e.,

$$(1) \quad i^t + e = i^a + p$$

where i is the annual interest rate, e the expected depreciation rate of the peso price of the dollar, p the expected inflation rate, and the superscripts denote the different types of bonds. From (1) it follows that the expected change in the real exchange rate (minus the expected foreign inflation rate) can be estimated as the interest rate differential between ajustabonos and tesobonos.

Let us look at the monthly values of the interest differential for the period August 1993 through November 1994 (figure 3). Although the series fluctuates over time, it is evident that, overall, no major change in the real exchange rate was ever expected. Focusing on the periods with the greatest interest differentials (in relative value), i.e. late 1993 and mid 1994, and making reasonable allowance for expectations about the international inflation rate (mainly the U.S. rate, given the composition of Mexico's foreign trade), the expected real depreciation was quite small, not likely above 2.5% per year. This suggests that, at the time of devaluation, investors were willing to carry domestic debt in their portfolios under the premise of, at most, a slowly depreciating real exchange rate.

Perhaps the most definitive piece of evidence comes from the type of portfolio shifts that accompanied the postdevaluation attack. A basic feature of the episodes of reserve loss before the devaluation was the enlargement of tesobono holdings; this portfolio recomposition reveals a desire by investors to cover from the possibility of a devaluation. In contrast, a prominent characteristic of the third attack was an attempt to shift away from tesobonos, which led to the collapse of tesobono auctions in late December (Folkerts-Landau et al 1995:5; see also Cole and Kehoe 1996, section 6).

Thus, in retrospective it seems clear that the financial panic observed in Mexico in the final days of 1994 was in last instance induced, not by the parity change itself, but by a widely held perception that the authorities could be forced to default on part of the country's domestic debt,

a belief that led to a massive attempt by investors to shift from local to foreign assets. There was an objective basis for this behavior: in particular, at the time of devaluation, (a) there was an exceedingly high ratio of short-term, dollar-indexed debt to foreign exchange reserves, and (b) reserves were falling. Thus it was a likely event that the government could lack, in the very near future, the foreign exchange needed to repurchase even a small fraction of its debt from investors unwilling to roll it over.

Consider the basic numbers. In February 1994, private holdings of domestic public debt were \$45 billion, most of which corresponded to nominal, peso-denominated treasury bills (cetes and bondes). In the aftermath of the Colosio shock, debt holdings fell to about \$34 billion, but remained roughly at that level for the remaining of the year. The currency composition of debt, in contrast, suffered a dramatic change, in that the share of tesobonos increased from (roughly) 5% in February to 30% two months later. Essentially, this jump coincided with the speculative attack prompted by Colosio's assassination, during which there was, as we saw, an \$11 billion loss in international reserves (figure 4).

By late April the reserve drain had stopped, but expectations of a possible revision in exchange rate policy persisted --at least in a segment of investors--, as revealed by the steady rise of dollar-indexed tesobonos in private portfolios. In particular, the share of tesobonos in total domestic debt moved from 30% in April to 50% in August. This reveals a policy decision to keep the peso band unchanged and release pressure from the foreign exchange market, without losing reserves, by continuing the substitution of maturing peso debt by exchange rate indexed bills. Reserve drain resumed in the first days of November 1994. By then the share of tesobonos was quite high, yet the authorities insisted on the same strategy of defending the peg by shifting from peso to dollar debt: by the end of December, tesobonos represented about 70% of total domestic debt.

Central bank officials were fully aware of the policy dilemma the economy faced during most of 1994. A rise in expected depreciation led to two options: (a) to accommodate expectations, or (b) to defend the peso band by a combination of exchange market intervention and rising interest rates. (a) was ruled out. Reserves were finite, however, while increasing the domestic interest rate would cause troubles to a banking sector which was already showing signs of distress. Facing the dilemma, the government opted for steadily indexing domestic debt to the nominal exchange rate, as a means of meeting the excess demand for dollar assets (Banco de México, *1994 Annual Report*).

It can be assumed that the Mexican authorities were hoping the pressure on the peso parity would eventually vanish. In the interim, however, they were assuming a very risky position, in that as the share of dollar-indexed debt rose, international reserves became increasingly insufficient to cover a possible run. In the end, the worst-case scenario developed. At the end of February, with international reserves of nearly \$30 billion and only \$2.5 billion's worth of dollar-indexed debt, the ratio of tesobonos to reserves was below 0.1. Things started to change within the next few months. First was the impact of March's political shock. As we saw, there was an immediate reserve drain exceeding \$11 billion, and at the same time, although total domestic debt fell, the value of dollar-indexed debt increased to \$10 billion because of a rise in the tesobono share. As a result, by the end of April the tesobono-reserve ratio was already 0.5. Still, for every dollar's worth of debt, there were two dollars in reserves (figure 5).

In the following months, reserves stabilized but at the cost of continuously increasing the share of tesobonos. By the end of July the tesobono-reserve ratio was already equal to one; there were just enough reserves to face a run on domestic dollar debt. Then came the second episode of reserve loss, during which the central bank lost \$7 billion (up to the time of devaluation) in foreign assets, while tesobono holdings kept rising. In this way, when the peso devaluation finally took place, the debt ratio was somewhere between 2.5 and 3; as a result of the

acceleration of reserve loss that followed the devaluation, the year closed with a relation of outstanding tesobonos to reserves of 3.5. Not only was the ratio extremely high, but the country was still losing reserves. Matters were further complicated by the antecedent of a reduction in the average maturity of domestic debt, which of course meant that investors could more rapidly try to shift from domestic assets, threaten by default risk, to foreign assets.

In view of the situation, the surprising fact is not that a run on tesobonos (and peso-denominated debt as well) eventually occurred, but that it took so long. Even more, the country's political risk premium, approximated by the interest rate differential between tesobonos and U.S. treasury bills, fell from 3.5 percentage points in May 1994 to less than 2 points in the week before the devaluation. The whole situation changed as soon as the ceiling of the peso band was devalued. As we noted, there was an immediate acceleration in reserve drain, and in addition, after a protracted period of rising private holdings of tesobonos, the tesobono auctions suddenly collapsed. This was accompanied, as could be expected, by a shift in the political risk premium, which in the two weekly auctions following the devaluation jumped from less than 2 points to more than 2.5 and then to nearly 5 points (figure 6).

It is evident, therefore, that in a very real sense the devaluation announcement triggered a run. Yet we have argued that initially the run was not caused by fears of further currency depreciation, but by political risk. In this respect, the parity change itself was immaterial, since by definition the ratio of dollar-indexed tesobonos to international reserves did not depend on the level of the exchange rate. If any, the effect of devaluation should have been positive, in that it tended to eliminate the real currency appreciation accumulated in the previous years and thus reduced the risk of future reserve loss.

Thus the timing of the collapse of tesobono auctions raises a puzzle, which has not received proper attention in the literature. While the devaluation announcement triggered the panic, it

could not do so by its effect on the fundamentals of the situation. We would argue that its impact came, instead, from the information it conveyed to market participants. With the devaluation there was a sudden realization of the existence of a high political risk on domestic assets. Where did this realization come from?

One possibility is that, with the realignment, investors became aware of the high proportion of tesobonos in total debt. This appears unlikely, however: first, because the Treasury had been periodically submitting to Congress information on the evolution of public debt, in which the rising share of tesobonos was explicitly mentioned [see *El Mercado de Valores* (MV) various issues, 1994; for reinforcing evidence, see Edwards 1997, p. 19]. But more importantly, because there is no reason to assume that a parity change would convey to market participants any implicit information about the composition of debt. If any, the effect should have been the opposite, given that with a stock of domestic debt mostly indexed to the dollar, the authorities had an incentive not to devalue, because of the concomitant rise in the peso value of debt.

Assume instead that investors were receiving information about the Banco de México's stock of international reserves with a considerable lag (say, a quarter), an assumption that seems to fit the actual situation in the country at the time (Folkerts-Landau et al 1996, and Klein and Coutiño 1996). In such circumstances, at the close of 1994 market participants had data that reflected a (spuriously) stable level of central bank foreign assets.

In this context of imperfect information came the devaluation announcement. For market participants, the most likely interpretation was that the central bank was being forced to devalue by the approaching of reserve exhaustion. The devaluation thus had a signaling effect, and in practice it had the impact of a reserve shock. With information "updated" in this way, the high risk of outright default or the imposition of exchange controls became clear to investors, and a financial run began.

3. The Mexican government strategy

3.1 Basic ingredients

The essence of the economic strategy followed by the Mexican government before the peso crisis of December 1994 was clearly stated at least since the late 1980s. The two basic elements were: (a) fiscal adjustment, and in general a macroeconomic policy stance which had the ultimate purpose of reducing domestic inflation to international levels; and (b) a program of structural reform encompassing trade liberalization, privatization of public assets and in general the deregulation of economic activity.^{2} {3}

The strategy was widely publicized by the government. For instance, in February 1990, President Salinas delivered a speech at the World Economic Forum, in Davos, Switzerland, in which he summarized his Administration's policies as a combination of: (a) fiscal reform, (b) disinflation, (c) external debt renegotiation, (d) trade liberalization, and in particular participation in regional free trade agreements with the purpose of locking in the trade reform, (e) promotion of foreign direct investment through opening of new sectors and a favorable tax treatment, and (f) privatization (MV March 1990, #5). The same message was delivered by Salinas in October 1990 at the United Nations, and in July 1992 at the Paris offices of the OECD.

As could be expected, the Mexican government emphasized these points in its communications to the IMF. For instance, in a letter of intention of January 1990 to the Fund, the Mexican authorities called attention to the rise in the primary fiscal surplus --from 6 to 8% of GDP-- registered during 1989, and the continuation of structural reforms in terms of promotion of foreign direct investment, privatization of public assets, trade opening, and deregulation of interest rates (MV 1990 #2). The same points were stressed in an April 1991 letter of intention.

In relation to the goals of macroeconomic policy, in the October 1992 pact renewal, for the first time authorities targeted a single digit level inflation rate for the following year. In his November 1992 address to Congress, president Salinas argued that price stability, meaning by that an inflation rate below 10%, was a condition for sustained economic growth. The Policy Criteria for 1993 set an inflation target of 7%, based as well on the claim that price stability was a necessary condition for steady growth.

The issue was taken up again by Salinas in May 1993, when the initiative of constitutional reform to grant the Banco de México full autonomy was submitted to Congress. There it was argued that high inflation rates represent a barrier to sustained growth, in that they produce negative changes in income distribution, a loss of efficiency in resource allocation, and low saving rates associated to low real interest rates (or alternatively low investment rates associated to the high interest rates demanded by savers to compensate for the inflationary risk). A similar analysis was put forward in the Policy Criteria for 1994. The inflation target for 1994 was 5%.

3.2 Current account, growth deceleration and bank lending boom

In section I it was argued that as disinflation proceeded and foreign capital inflows gained force during 1990-1991, signs of potentially serious macroeconomic problems emerged; essentially, these consisted of a sustained process of real currency appreciation, output growth deceleration, and high current account deficits associated to low private saving rates and a commercial bank lending boom. Initially, the dominant view within the government seems to have been the need to avoid a real appreciation of the peso in the course of disinflation. For example, in the January 1990 letter of intention to the IMF referred to above, the Mexican authorities pointed out that the introduction of a one peso daily crawl rate was intended as a means to avoid losing

competitiveness (MV 1990 #2). Their concern for the future evolution of the current account is evident in the subsequent April 1991 letter, in which the government stated its expectation of a future rise in both public and private saving rates.

Later on, however, what could have been considered as troublesome was instead interpreted as a positive outcome of current public policies. For instance, in its 1990 Annual Report (early 1991), Banco de México argued that the government's economic strategy, based on trade and financial deregulation and a stronger role of the private sector in the economy, was having a positive impact on private expectations, which materialized in a surge of capital inflows, growing exchange reserves and falling domestic interest rates, and would lead over time to higher investment and GDP growth.

From the Bank's standpoint, the rising current account deficit did not represent by itself a problem for economic policy, given that it reflected, not a fiscal deficit, but an excess of private expenditure.^{4} The same view was expressed by president Salinas in his November 1991 address to Congress and in the Policy Criteria for 1992 (late 1991). At the time, the exchange rate band ceiling's daily crawl rate was set at 0.02 peso cents, a fall from the preceding crawling peg rate of 0.04 cents per day. The decision was justified by two considerations: first, the adoption of a single digit target for the inflation rate, and second, the strong rise in exports registered in the previous months and the overall surplus in the balance of payments (which was reflected in the expansion of international reserves).

Banco de México insisted on the same diagnosis in its 1991 Annual Report (early 1992). It was claimed that the sustained adoption of stabilization policies together with the advance registered in the program of structural reform (which during 1991 included privatization of banks, talks for a North American free trade area, financial liberalization --removal of liquidity coefficient for banks and of exchange controls--, and an initiative to reform the conditions of

land tenure in the rural sector) had resulted in an improvement of expectations in the private sector. On the question of whether the country faced a problem of currency overvaluation, the Bank remarked that the observed growth in real peso wages in the industry did not erode the country's competitiveness, because the wage rises were being accompanied by offsetting gains in labor productivity.^{5} It was further argued that the surge in capital inflows would bring a growing supply of tradables in the future, and contribute in that way to reduce the current account deficit. The risk of a sudden reversal in capital inflows was acknowledged but, according to the Bank, the stability of the flows depended mainly on the government sticking to a set of consistent macroeconomic policies; finally, it was noted that, in the event of a reversal, the country had anyway enough exchange reserves to face it.

Similar arguments were advanced by Salinas in his November 1992 address to Congress and in the Policy Criteria for 1993 (late 1992). It was again claimed that the rise in the current account deficit was not a matter of concern, for several reasons: (a) it was being generated by private borrowing, (b) exports were growing at a relatively high rate of 10%, (c) 85% of imports consisted of intermediate and capital goods that would further elevate exports in the future, and (d) exchange reserves were rising. In his address to Congress, the President attributed the observed deceleration in output growth to a combination of slower world output growth, transitory effects from the trade opening, and the impact of disinflationary fiscal, monetary and exchange policies. Essentially the same diagnosis was advanced by Salinas in his November 1993 Congress address and in the Policy Criteria for 1994. Expectations were optimistic: with a 3% GDP growth estimated for 1994, the current account deficit was expected to reach 5% of GDP (lower than the 5.4% in 1993), instead of the 7.9% actually registered.

The Banco de México's 1992 Annual Report (early 1993) addressed the issue of growth deceleration. Several factors were mentioned, among them the fall in world output growth and the "transitory" effect from heightened competition faced by domestic firms due to the

liberalization of trade. But in addition, the Bank called attention to existing uncertainty about whether NAFTA would be approved and, interestingly, to concerns about the high current account deficit; however, in the Bank's opinion, such concerns arose from "an insufficient analysis of the phenomenon" (MV 1993 #10:16). The fall in the domestic saving rate had as well been identified, and it was attributed to factors like the erosion in private spending during the eighties, a rise in permanent income due to an improvement in long term expectations, and greater real financial wealth in the private sector (particularly from stock holdings). The importance that the saving rate increased in the future was noted, in particular because that would keep the external deficit within certain bounds. For this purpose, "... sustaining healthy public finances, monetary stability and an efficient financial system ... are indispensable..." (MV 1993 #10:22).

Central banker Mancera took up the current account issue in an April 1993 analysis. He claimed that no single relationship exists between variations in the real exchange rate and a country's current account, and that given the observed rise in the Bank's exchange reserves, a reflection of an excess demand for pesos, it could be argued that the peso was in fact under-valued against the dollar (MV May 1993 #10:11).{6} The same diagnosis was advanced in the Bank's 1992 Annual Report (early 1993).

With respect to the observed behavior of private saving, Mancera noted the following in August 1993: "the share of investment in GDP has grown from 16.1% in 1987 to 21.7% in 1992 ... Total domestic saving has fallen from 22 to 16.3% of GDP ... despite a rise registered in public saving, which means a significant reduction in private saving, *which I estimate to be temporal* (MV 1993 #17; my translation; emphasis added, p. 15). He argued that by itself the resulting current account deficit was not a problem, but that it could have a negative impact on private expectations. He dismissed the advisability of trying to modify the real exchange rate to affect the current account; in particular, he pointed out that exports were growing at 10% annually

and thus that there could not be a problem of misalignment (the same point was made in the 1993 Annual Report, where the central bank noted that total exports --excluding oil-- grew 17% during 1993). The governor argued that the best way to reduce the deficit was to increase domestic saving (p. 18). Finally, a new (complementary) explanation for growth deceleration was proposed: lack of credibility in the disinflationary program was producing real wage rises larger than productivity improvements (thus raising domestic production costs), and high ex post real interest rates. Essentially the same explanation for lower economic growth was advanced in the Bank's 1993 Annual Report (April 1994), where it was argued that the deceleration would be temporary.

As regards the commercial bank lending boom, the central bank stated in its 1990 Report that the rapid pace of financial deepening witnessed at the turn of the decade, with a 12.3% real growth rate for M4 during 1990, represented a positive development. The issue was taken up in the Policy Criteria for 1994 (late 1993). It was noted that the relation of M4 to GDP had risen from 35% in 1988 to an estimated 50% in 1993; in the same interval, aggregate lending to the private sector had increased 225% in real terms. This was deemed "a favorable evolution of financial markets ... as an outcome of reforms and sound public finances" (MV 1994 #2:16). A further 17% rise in real aggregate lending was expected for 1994.

In its 1993 Annual Report, Banco de México observed that during that year there had been a fall in the growth rate of bank lending, which had expanded 388% between end of 1988 and end of 1992. Interestingly, the Bank attributed this deceleration in part to an erosion in the quality of assets in commercial banks' portfolios, which had led to a more cautious credit policy. In particular, there had been a rise in the ratio of delinquent loans from 5.3% in December 1992 to 7.1% in December 1993. It was considered, however, that this represented no serious risk for banks, because of existing high levels of capital and precautionary reserves, and because of the practice of grade rating of assets. It was also noted that there had been a deceleration in credit

demand because of a situation of over-indebtedness among some firms and individuals (MV 1994 May #5:31).

Finally, in his November 1994 Congress address, President Salinas insisted on the same diagnosis: the shift of total borrowing from 14% of GDP in 1988 to 39% in 1993, and the 18% annual growth rate in real lending between January and September 1994, were both signs of unqualified good economic performance

3.3 Devaluation and crisis

On 1 December 1994 a new government took office in Mexico, and soon afterwards --despite past assurances that the country's macroeconomic performance showed no signs of distress-- the peso was devalued. Perhaps the best way to understand the new Administration's decision to devalue, is to recall President Zedillo's words at the signature of the so called Acuerdo de Unidad para Superar la Emergencia Económica (Agreement to Overcome the Economic Emergency, AUSEE) by labor unions, private firms and the federal government, on 3 January 1995:

"Mexico faces a severe economic problem ... coming from a significant current account deficit accumulated over several years and financed by short term private capital inflows. This deficit resulted in a situation of high vulnerability for the economy ... The economic program initially designed for 1995 had the goal of slowly reducing this vulnerability, by gradually adjusting the current account deficit ... A clear opportunity consists of freeing our economy from the burden of an overvalued exchange rate. This burden made it impossible to translate the structural change ... into more dynamic economic growth" (MV 1995 #2; 3, 6; my translation).

The same view was expressed by Secretary of the Treasury Guillermo Ortiz in an article which appeared in the 5 January 1995 issue of the Wall Street Journal. There he argued that the basic economic problem in Mexico was the existence of a high current account deficit, associated with an overvalued currency and an excessive growth in bank lending. In his opinion the economic program for 1995, anticipating a current account deficit of \$31 billion, was deemed unsustainable by investors.

These quotations show the fact that before the peso was devalued there was a change in diagnosis among top government officials regarding the implications of the currency appreciation, the current account deficit and the bank lending boom.

The policy response to the post-devaluation panic initially consisted of an economic program (the AUSEE), whose main ingredients were (a) fiscal adjustment, further privatization and more opportunities for foreign investment in domestic banking, plus (b) the negotiation of an \$18 billion financial package with the U.S. The policy announcement failed to calm down financial markets, though, and on 9 March 1995 a new program, the so called PARAUSEE, was adopted. It involved a stronger fiscal adjustment, and a new program of bank capitalization, whereby so called FOBAPROA would absorb part of a bank's non performing loans.

The impact of the stabilization program on investor sentiment is studied in section 6. Here we focus on the diagnosis presented in the program. According to the PARAUSEE, the two basic factors behind the instability showed by financial markets in the aftermath of the devaluation were: (a) a process of world portfolio recomposition, consisting of a shift of funds from developing to developed countries, as a result of higher interest rates in the latter and perceptions of increased risk in the former; and (b) the uncertainty surrounding the negotiations with the IMF and the U.S. for an emergency financial package. Secretary Ortiz called attention to two additional factors, namely (c) the perception that the initial 15% shift in the band ceiling

was insufficient to correct the cumulative real appreciation, and (d) the possibility of default on tesobonos.{7}

On the other side, it is interesting to note that Banco de México insisted on its interpretation of the pre-devaluation events, even after the December crisis. For instance, in a February 1995 analysis, Governor Mancera argued that (a) the high current account deficit was a temporary phenomenon that would disappear as ongoing investment projects began expanding the tradables sector production capacity, (b) the high dynamism of exports showed that there was no problem of currency overvaluation, and (c) the problem with the deficit was that investors became nervous about it.

The same point was made in the Bank's 1994 Annual Report (early 1995), in which it was asserted that as long as the currency appreciation is accompanied by domestic productivity rises, there has to be no loss of competitiveness. This would have been exemplified by the case of Mexico, whose exports showed great dynamism before the devaluation. It went on to argue that "the stability of exchange reserves [between late April and early November] ... was evidence that at the prevailing exchange and interest rates ... the balance of payments was in equilibrium" (MV 1995 June #6:16){8}. The reduction in the capital account surplus during 1994 was thus attributed to the political shocks at home and the rise in international interest rates.

4. The IMF

4.1 The IMF strategy

With frequency, the IMF has argued that economic success for developing countries depends on their following a strategy that combines three basic elements: (a) sustained macroeconomic

adjustment, based on tight fiscal and monetary policies consistent with a low inflation rate; (b) structural reform, including trade liberalization, deregulation of financial markets, and privatization of public assets; and (c) for heavily indebted countries, external debt renegotiation.

For instance, in his opening statement to the September 1990 Annual Meetings of the IMF and the World Bank, the Fund's Director, Michel Camdessus, asserted that "the more successful developing and industrial countries" have included (a) and (b) as a central part of their policy packages. The same point was made in the presentation to the October 1991 Meetings when talking about the lessons from the Asian experience of rapid economic growth; and in the 1992, 1993 and 1994 Meetings when describing the key ingredients in the strategies of a group of 35 successful developing countries.

The importance of having dealt with the external debt problem, which will open "buoyant opportunities" for countries like Mexico, was mentioned by the Fund's Director in the October 1991 meetings. In his concluding remarks, he went on to argue that there is "virtually unanimous agreement on what policies work ... -for dealing with debt, or for promoting development". Similarly, in the IMF's 1991 Annual Report it was claimed that the far-reaching structural reforms adopted in Mexico (among other countries), had resulted in growth resumption, disinflation, and substantial capital inflows (p. 11); and in the 1992 Annual Report, it was argued that the re-entering of Mexico, among others, to the international capital market was "the market response to the sustained adoption of the right economic measures" (p. 50).

The same perspective is found in analyses by the Fund's staff. For instance, in the May 1991 issue of International Capital Markets it was argued that the basic pre-conditions for the re-entry of heavily indebted developing countries to international capital markets consisted of the sustained adoption of adjustment policies, structural reform and the restructuring of commercial bank debt (pp. 13, 69). This was exemplified by the recent case of Mexico (p. 14); in

particular, "... the trading volume for claims on Mexico [in the secondary market] is reported to have risen substantially following the completion of its debt-restructuring agreement in early 1990" (p. 81).

The May 1992 World Economic Outlook attributed the observed rise in the pace of economic growth in Mexico, among a group of developing countries, to a strategy consisting of "reforms in macroeconomic policies, trade liberalization, economic deregulation, and the privatization of public enterprises..." (pp. 9, 36). The same ingredients for stabilization and growth were singled out in the May 1993 Outlook (p. 6) and in the October 1993 issue (p. 7), which explicitly commended the policies adopted by the governments of Chile, Mexico and Argentina.{9}

The October 1994 Outlook devoted an entire section to the analysis of the surge in capital flows to developing countries. It concluded that foreign investment in Mexico, among other countries, was being attracted by the programs of fiscal adjustment and structural reform (financial deregulation, privatization, tax reform, trade liberalization). In fact, "capital inflows to Mexico in the early 1990s were undoubtedly stimulated by the initiation of negotiations for the NAFTA, which was eventually signed in 1993" (p. 55).

4.2 Mexico falling short

It is immediately clear that there was a broad coincidence between the policies applied in Mexico and those recommended by the IMF. It is no surprise, then, that from the Fund's standpoint, the positive change in market sentiment toward the country was justified by a shift in fundamentals. It should be noted as well, however, that there were important differences between expected and actual results of the pursued policies. These concerned aspects of

economic performance for which information was available and which turned out to be important in the eruption of the crisis.

There was, in the first place, the issue of the real exchange rate. Both in Camdessus's remarks and in the staff reports, there was a continuous stress on the need to maintain a viable level for the exchange rate. For instance, in the 1992 Annual Meetings, the Fund's Director included a "realistic exchange rate" among the key determinants of good economic performance (p. 18). He made the same point in the 1993 Meetings (p. 22), and went on to mention that the recent experience of EMU (making implicit reference to the currency crises of the early nineties) showed that "credibility also depends on consistency between economic policies on the one hand and the country's economic performance and domestic requirements on the other" (p. 24; for the same point, see the World Economic Outlooks for May 1992 --pp. 26-28-- and May 1993 --p. 6--).{10}

In the second place, there was always an emphasis on the need to promote domestic saving. For instance, in his analysis of the Asian experience, Camdessus claimed that an important ingredient was "sustained high rates of saving allowing substantial productive investment..." (p. 15; the same point was made in the May and October 1993 Outlooks --pp. 6, and 8 and 69, respectively). It is interesting in this respect the observation in the October 1994 Outlook that among recipients of heavy capital flows in Latin America, the investment ratio had remained constant. Although not mentioned, this had the direct implication that the inflows and accompanying current account deficits of the early 1990s had led to lower saving rates. The Fund called attention to some exceptions, including Mexico (p. 57). But then there is a sharp contrast between pre- and post-crisis assessments; for example, in the May 1995 Outlook, it was commented again that in Latin America, as opposed to most developing countries in Asia, the period of heavy capital inflows was accompanied by a very slightly rising investment rate and a strongly declining saving rate (p. 46).

A third issue concerned the heavy capital inflows registered in the early 1990s in a number of Latin American countries. For the Fund, it was clear that the current account deficits in countries like Mexico did not have a fiscal origin. It was noted, however, that the “future sustainability [of the capital inflows] was not necessarily assured” (p. 26). This represented a potential problem. The difficulties posed by the inflows were also clearly stated: they generate inflationary pressures, induce sharp rises in consumption and asset prices, and may result in real currency appreciation (October 1992 Outlook, p. 39). The same point was made by Camdessus himself in his opening statement to the 1993 Annual Meetings: the return of private capital to developing economies was a reward for macroeconomic adjustment and structural reform, but he added, first, that this did not obviate the need to promote national saving, and second, that prudence was necessary in facing the inflows, which bring with them “pressures and risks” (p. 22).

In fourth place we may mention the lessons from the banking difficulties of some developed countries in the early nineties. A first point, discussed in the August 1993 issue of *International Capital Markets*, has to do with the typical behavior of the banking sector before a crisis. There was a recognition that the increased competitive pressures brought about by a policy of financial liberalization represent an incentive for banks to involve in riskier activities (p. 3). Moreover, the experience of a group of developed economies during 1991-92 showed a pattern of “sharp expansion in bank lending relative to nominal GDP...” after financial liberalization as a prelude to banking problems (p. 4).

In light of this evidence, a second lesson is that, “the supervisory and regulatory framework must remain strong and evolve along with the evolution of markets themselves if their integrity ... is to be preserved” (*International Capital Markets*, September 1992, p. 1). Similarly, in the October 1992 Outlook it was noted that financial sector reform (e.g., removal of interest rate and credit controls) must go accompanied by an update in legal and accounting systems,

enforcement of laws regarding collateral and foreclosure, and strong prudential regulation and supervision (p. 41); finally, in the October 1994 Outlook it was mentioned that, following massive capital inflows, banking systems with distortions, "inadequate supervision and prudential standards could lead banks to engage in excessively risky lending behavior" (p. 60).

Given the record of Mexico in these four points, it is obvious that the country was falling short of meeting a number of key indicators of economic performance, and therefore there arises the question of why did the country consistently receive such positive assessments in the Fund's reports, right up to the crisis. The Fund was well aware of the country's external situation: in the October 1994 Outlook it was noted that there had been a rise in the current account deficit, as share of GDP, from 3.25% in 1990 to an estimated 6.5% in 1994 (p. 31). Moreover, even before, in the August 1993 issue of *International Capital Markets*, the reduction in spontaneous financing to LDCs together with the erosion in terms registered in the second half of 1992, was attributed to a change in investor attitudes which could be related to "the wide external current account deficits in Argentina and Mexico ..." (p. 60).

The consistently positive assessments may be explained, at least in part, by the fact that the policies applied in Mexico followed closely the IMF's recommendations. For instance, in the October 1992 Outlook higher economic growth in Mexico was attributed to reforms in macroeconomic policies, trade liberalization, economic deregulation, and the privatization of public enterprises, along with the external debt renegotiation (p. 36). Given this agreement on the overall orientation of policies, it became possible to argue that the process of real currency appreciation observed in Mexico was justified by fundamentals and thus represented no policy concern; or that although there had been a fall in the saving rate, there had been as well a modest rise in the investment rate (October 1994 Outlook, p. 57); or that although growth was sluggish, this would be a short-lived phenomenon (October 1994 Outlook, p. 15); or that, in general, the success of the exchange rate policy depended, not on whether the rate was fixed o

flexible, but on the adoption of prudent fiscal and monetary policies (October 1994 Outlook, p. 28).

The ambiguity sometimes present in Fund's analyses is shown in the following two examples{11}: first, in an analysis of the phenomenon of massive capital inflows to developing countries, it was claimed that in most cases receiving countries had shown strong economic growth or were expected to do so because of their current policies (October 1994 Outlook, p. 6). Second, when analyzing the risks posed by massive capital inflows, it was argued that "[i]n general, the most appropriate response appears to be fiscal restraint, which can limit the pressure on interest rates, and the risk of inflation" (October 1993 Outlook, p. 41). On these criteria, Mexico would pass the test, in particular as the country's inflation approached single digit levels. But then it is noted that "[a] real exchange rate appreciation may not be appropriate for countries that already have an unsustainable large current account deficit or for which the widening of the deficit reflects a fall in domestic saving instead of a rise in investment." (p. 80).

4.3 The peso crisis

The initial official response of the IMF to the Mexican crisis was to label it as a crisis of a new kind. In late 1995, Camdessus pointed out what in his view were the main lessons to be learnt. In particular, developing countries should: (a) keep tightly disciplined macroeconomic policies, (b) manage carefully massive capital inflows, which should not become a substitute of national saving, and (c) establish domestic financial sectors which are "sound, well regulated, and properly supervised" (Presentation, 1995 Annual Meetings, p. 29). In the IMF's 1995 Annual Report, it is further noted that: (a) the Mexican authorities did not provide the Fund with key information before the crisis; and (b) the Fund surveillance was not completely effective in warning Mexico about the risks present in a "system of fixed parity" (pp. 51-2; Spanish version).

The May 1995 Outlook reflected that in Mexico repeated episodes of reserve loss had forced the authorities to devalue the peso, which in turn resulted in a "severe confidence crisis". It was argued that reserves had declined because of (a) concerns about the high level of the country's current account deficit, and (b) the political shocks of 1994 (p. 2). It was observed as well that the current account deficit was in part the result of a fall in the domestic saving rate, financed by a surge in capital inflows (p. 47). The report concluded that the Mexican experience made clear the limits to the viability of external disequilibria and currency appreciation, and in particular it showed the risks associated with having a very low rate of domestic saving (p. 7).

In the October 1995 Outlook it was observed that the Mexican authorities responded to the crisis with a stabilization program featuring "a significant improvement in the fiscal situation"; the goals were to increase domestic saving, reduce the current account deficit and stop inflation. It mentioned that the initial results, including a rising stock exchange index, falling local interest rates and exchange rate stability, suggested that the program had been successful (p. 9).

Two issues are immediately raised by the IMF's analysis. The first one is that it is consistent with the policy analyses and recommendations made by the Fund well before the Mexican peso crisis, in which there was a permanent emphasis on the need to tightly conduct fiscal and monetary policies and to promote high rates of local saving, and the risks posed by massive capital inflows and booming banking lending. Hence the idea that the Mexican was a crisis with no precedent does not seem warranted, according to the Fund's own criteria.

The second question is that the Fund apparently never saw developments in Mexico as cause of serious concern. In this respect, it would be misleading to argue that there was a problem of insufficient information. As we saw, the staff knew about the steep rise in the current account deficit before the 1994 and a tendency toward economic deceleration; it surely was not particularly difficult to find out that the rise in the deficit was not fully matched by a rise in

domestic investment. Of course, it was always known that Mexico was among the main recipients of private capital in the developing world, largely in the form of bond and equity investments. And the Mexican authorities themselves proudly called attention to figures that showed a boom in the domestic banking sector well before the crisis. Information was publicly available on the increasing share of dollar-indexed tesobonos in domestic debt (Edwards 1997). In light of this, a likely lesson is that, in the midst of financial euphoria, knowledge of the state of fundamentals (even if there is agreement on what the set of relevant fundamentals is) is not enough to prevent a crisis, a conclusion that runs counter a widely held opinion that the crisis was caused by the existence of poorly informed investors.

5. Investor sentiment and policy credibility

In this section we take a first look at the way investor sentiment evolved in Mexico before, during and immediately after the peso crisis. We consider three basic indicators: capital flows, interest rate spreads and, derived from these, the degree of exchange rate policy credibility.

3.1 Capital flows

In the first years of the nineties there was a dramatic change in investor sentiment toward Mexico, as revealed by the behavior of international capital flows. The turning point was 1990, when foreign investment increased from an annual average of \$3.7 billion in 1988-89, to \$6 billion. After that, there was a steady rise in private capital inflows, which shifted from \$17.5 billion in 1991 to \$33.3 billion in 1993 (figure 7).

As part of this trend, foreign direct investment increased from \$3.2 billion in 1989 to \$4.4 billion in 1993. Portfolio investment, however, was by far the most dynamic component, growing from \$0.4 billion to \$28.9 billion. This reflected an increase of investments in the stock exchange, from \$0.5 billion in 1989 to \$10.7 billion in 1993; in peso-denominated bonds, from zero to \$7.4 billion; and in foreign-currency-denominated bonds, from *minus* \$0.1 billion to \$10.8 (figure 8).

The situation during 1994 is worth looking at. During the first three quarters, foreign investment continued flowing into the country, albeit at a slightly slower pace: the quarterly average was \$7.6 billion, below the corresponding \$8.3 billion figure for 1993. The deceleration was caused by the behavior of portfolio flows, which in quarterly average fell from \$7.2 billion during 1993 to \$4.6 billion during the first three quarters of 1994; direct investment, in contrast, rose from \$1.1 billion to \$3.1 billion. The reduction of portfolio investment concentrated in the market for peso assets: peso bond investments fell from a quarterly average of \$1.9 billion in 1993 to \$0.8 billion up to September 1994, while stock exchange investments declined from 2.7 billion to 1.5 billion dollars in the same period. In contrast, foreign-currency bond investments shifted from 2.7 to 2.3 billion dollars, a much smaller reduction.

These figures suggest that as the December 1994 devaluation approached, there was some erosion in exchange rate policy credibility, prompting some individuals to reduce their investments in peso-denominated financial assets. It seems important to stress, however, that capital inflows turned negative only after the devaluation, which would show that there was a segment of investors who were willing to invest in Mexican assets even in the months preceding the December crisis. On the other hand, the strong expansion in foreign direct investment implies that, beyond the possibility of currency realignment, the medium term outlook for the Mexican economy remained positive. This insight is reinforced by the behavior of capital flows during and after the peso crisis.

During the crisis, capital inflows of course collapsed. Foreign investment in the fourth quarter of 1994 and the first of 1995 was *minus* \$9.2 billion. The massive outflow stopped in the second quarter of 1995, when foreign investment totaled *minus* \$0.9 billion. Positive investment flows restarted in the third quarter of 1995; for the second half of the year, total investment was \$6.1 billion, and the figure for the entire 1996 was \$22.6 billion.

There was a sharp contrast in the evolution of direct and portfolio investment. The former remained positive throughout the period, totaling \$9.2 billion in 1994 (with \$1.7 billion in the last quarter of 1994), \$9.5 billion in 1995 and \$9.2 billion in 1996. In contrast, cumulative portfolio investment during the last quarter of 1994 and the first of 1995 was *minus* \$12.9 billion. During the second quarter of 1995 there was still an outflow of \$3.8 billion. After a negative investment of \$0.2 billion in the third quarter, capital started flowing in again in the final quarter of the year, with an investment of \$1.7 billion. Interestingly, investments in the stock exchange fell mainly in the fourth quarter of 1994 (*minus* \$0.4 billion); afterwards, capital flows were slightly positive (\$0.5 billion for the entire 1995). Thus it was basically investment in peso-denominated debt which accounts for the capital outflows observed in late 1994 and during 1995. In particular, from the fourth quarter of 1994 through the last of 1995 there was a cumulative outflow of \$17.6 billion. Investment in foreign-currency-denominated debt was *minus* \$3.8 billion between the fourth quarter of 1994 and the second of 1995; afterwards, there were again positive capital inflows.

3.2 Spreads

The evolution of spreads on Mexican debt reinforces one point just made, namely, the turnaround in investor sentiment toward Mexico at the start of the nineties. For instance, in the September 1992 issue of the IMF's International Capital Markets it was observed that the

phenomenon of improved terms of financing had been “most apparent in Mexico”, where for instance “yield spreads at issue on unsecured Mexican public sector bonds fell further during the course of 1991, to an average of 228 basis points during the second half of the year, a reduction of 40 percent compared with the spread of 1990” (p. 40). Besides this, “the initial maturity of public unsecured bond issues lengthened from an average of 3.8 years during the second half of 1990 to an average of 5.7 years during the second half of 1991” (p. 40). There was in addition a rise in the secondary market price of bank claims, with the average for Chile, Mexico and Venezuela moving from 40% of face value in early 1990 to nearly 80% by mid 1992 (p. 43, chart 8).

In the August 1993 issue of *International Capital Markets*, it was noted that Standard and Poor’s had assigned a AA+ rate to Mexican treasury bills (cetes) in November 1992 (p. 53). Moreover, in the September 1994 issue, it was mentioned that “in January, the market was anticipating that Standard & Poor’s would upgrade Mexico from the highest subinvestment grade rating ... to the lowest investment grade rating ... As a result, the spread on Mexican sovereign issues fell to about 150 basis points, before the current market correction pushed the spread back to about 200 basis points” (p. 90). Note that this report was issued only three months before the December devaluation. Consider as well the view expressed by J.P. Morgan in late 1994: “we view Mexico as investment-rate risk. We do not regard Mexican debt to have predominantly speculative characteristics” (quoted by Edwards 1997, p. 7). Taking a longer view, the IMF report observed that “since 1989, Mexico has consistently paid the lowest spread of the major Latin American borrowers; the spread fell to below 200 basis points after NAFTA was approved in November 1993” (p. 90).

Thus it is clear that in the early years of the 1990s there was a positive shift in investor sentiment. We also see that in the eve of the crisis investor attitudes in at least a segment of the market remained positive. It is interesting to recall as well that in the first three quarters of 1994

there was still positive foreign investment in peso-denominated debt, while simultaneously some investors steadily shifted from cetes to tesobonos. This suggests that there was a segmentation of expectations among investors, with some of them shifting from peso to dollar denominated assets, even as others (including some foreigners) kept increasing their holdings of peso bonds.

3.3 Exchange rate policy credibility

As was already mentioned, during 1991–94 exchange rate policy in Mexico took the form of a sliding peso band against the U.S. dollar, with the band's floor fixed from November 1991 onward and the ceiling's crawl rate periodically revised in the renewal of the disinflationary pacts. As is well known, under conditions of free capital mobility and risk neutrality, depreciation expectations can be obtained from a domestic peso-dollar interest rate differential. However, given that we are interested in measuring policy credibility, instead of depreciation expectations per se, we have to adjust the differential for the peso depreciation within the band. Thus our procedure involves the following steps (see Svensson 1991): first, we estimate the expected peso depreciation from the arbitrage condition that the expected return on peso-denominated cetes and dollar-indexed tesobonos be equal, i.e.,

$$(2) \quad {}_t d_m = ({}_t S_{t+m} / S_t) - 1 = \{(1+i_t) / (1+i^*_t)\}^n - 1,$$

where ${}_t d_m$ is the expected m-day depreciation rate on t, S_t the spot exchange rate (peso price of the dollar), ${}_t S_{t+m}$ the m-term expected exchange rate, i^* and i the annualized m-day tesobono and cete interest rates, respectively, and $n = m/365$. Next, using the official crawl rate, we can compute the maximum depreciation rate compatible with the band, defined as the difference between the announced ceiling and the current exchange rate,

$$(3) \quad {}_t d_{\sim m} = (S_{\sim t} + \alpha m) / S_t - 1,$$

where ${}_t d_{\sim m}$ is the maximum m -day depreciation rate to be allowed within the band as of t , $S_{\sim t}$ is the current band ceiling, and α is the daily crawl rate (in pesos). Finally, to measure the degree of policy credibility, we subtract the maximum depreciation compatible with the band from the expected depreciation rate and obtain what we call the excess expected depreciation rate:

$$(4) \quad \chi_m = {}_t d_m - {}_t d_{\sim m};$$

clearly, a positive χ value would be a reflection of a less than fully credible exchange rate band.

In the estimation of (2) the shortest interest rates available were used (28-day rates through mid 1992, and 91-day rates thereon) in order to minimize any possible distortions arising from expectations of capital gains. Figure 9 presents the weekly series for ${}_t d_{365}$ and ${}_t d_{\sim 365}$. From the figure it is clear that strong changes in expectations took place over time. We may note, in particular, the rapid increase in the annual expected depreciation rate during most of 1992 (reaching a 14% peak by the end of the year), the subsequent fall to 4% in early 1994, and finally the discrete increase in the interest differential that followed the assassination of Colosio in March 1994.

Note as well the steady rise in the maximum depreciation rate, up to a 12.5% peak before the political shock. This gradual improvement in the band's strength came from two sources: a) the higher crawl rate introduced in October 1992, and b) the stabilization of the exchange rate, which resulted in an increasing gap between the actual rate and the band ceiling. As was noted before, this latter factor can be explained, at least for the period before the November 1993 ratification of Nafta, by the existence of a narrow band within which the Banco de México

intervened on a daily basis (see Schwartz 1994). Given the magnitude of capital inflows during the period, it seems plausible to assume that without intervention the exchange rate would have appreciated in nominal terms. The increase in the maximum depreciation rate would have been stronger.

Figure 10 presents the weekly series for χ_{365} , whose behavior reflects the joint effect of variations in the expected depreciation rate and in the position of the exchange rate within the band. We may note:

a) The steady erosion in credibility during most of 1992 (with χ_{365} peaking at 10% in October), followed by a sustained improvement between late 1992 and early 1994, that led to a situation of full credibility ($\chi_{365} < 0$) by mid 1993. Taking into consideration the information in figures 9 and 10, it can be seen that full policy credibility in Mexico was the combined outcome of: (i) a steady fall in the expected depreciation rate, (ii) the October 1992 rise in the band's crawl rate, and (iii) the stabilization of the actual exchange rate, which resulted in the rate steadily shifting toward the strong (lower) half of the band.

b) The 14 point upward jump after the political shock of March 1994, raising χ_{365} to 6% by early April. Expectations stabilized rapidly, though, and there was a relatively low χ_{365} value (2.5%) just before the December devaluation. This apparent recovery in credibility was notable for the conditions in which it took place, namely, a substantial cumulative currency appreciation and the uncertain political environment of 1994.

In assessing this numbers, it is equally important to recall that after March 1994 there was a steady currency recomposition of domestic debt, by which cetes were increasingly substituted by tesobonos. This means that the prevailing cete-tesobono interest rate differential was not reflecting accurately the actual changes registered in depreciation expectations; what was

happening was that those investors with the highest expected depreciation were leaving the cete market, and this tended to reflect a spurious improvement in policy credibility. If we recall the evolution of foreign investment during 1994, the possibility becomes clear that the relatively low interest rate differential existing before the devaluation reflected mainly the exchange rate expectations of foreign investors.

The cete rate skyrocketed after the devaluation. After registering an annual level of 15% in December 1994 (and less than 14% before the devaluation), the annualized 28-day rate jumped to 37.7% in January 1995, 42.4% in February, 70.7% in March and peaked at 74.9% in April. Afterwards it started descending. For the rest of the year, the average rate was 44.7%, while for 1996 it was 31.3%.

6. Shocks to investor sentiment

We now take a more detailed look at the evolution of interest rate differentials as an indicator of changes in market sentiment, and relate it to the possible influence of different shocks that affected the Mexican economy during our period.

Our first indicator is the annual interest rate on 28-day treasury bills (cetes). As was mentioned, a first positive shock came in the late eighties with the introduction of the new disinflationary program embodied in the pacts. The initial pact was signed in December 1987. The previous months had been of a rising interest rate in the context of accelerating inflation. In particular, the cete rate had increased from 90% in October 1987 to 123% only two months later, with the annual inflation rate closing the year at 132%, after increasing steadily in the preceding months. Perceptions of the likely success of the new disinflationary strategy quickly showed in the level of the interest rate. After peaking at 158% in January 1988, the cete rate rapidly fell to 40% by

June of that same year. Domestic inflation also declined, but at a slower pace; it was not until late in the year that the inflation rate fell to levels near 40% (figure 11).

After this first stage of very rapid disinflation, there came a second period characterized by stable, for a while even slightly rising inflation; in particular, the annual rate remained slightly above 20% from mid 1989 through late 1991. In contrast, the cete rate experienced significant variation, falling from about 50% when President Salinas announced in mid 1989 the conclusion of the renegotiation of the country's commercial bank debt, to 16% by the time the peso band was announced in November 1991 (figure 12). A casual look at the series strongly suggests private expectations, as reflected in the cete rate, were positively influenced by the debt renegotiation announcement, the initiative to privatize domestic banks --sent to Congress by Salinas in May 1990--, the recommendation made by the Mexican Senate in June of that same year to seek a free trade agreement with the U.S. and the European Union, and the anticipation of the beginning of talks toward a free trade agreement with the U.S. mentioned in the Policy Criteria for 1991 (late 1990).

A third stage in economic policy started with the introduction of an explicit band with fixed floor and depreciating ceiling in November 1991. Given the availability of information, here we can incorporate into the analysis the behavior of the interest rate on dollar-indexed tesobonos, which enables us, as explained in the previous section, to extract an indicator of depreciation expectations among investors. The actual exchange rate was quite stable from November 1991 through March 1994, fluctuating around a value of 3.1 pesos per dollar. The stability of the exchange rate had the consequence of yielding a growing gap between the rate and the band ceiling; this offered room for absorbing negative shocks to the parity without having to revise the previously announced policy. In particular, the maximum depreciation consistent with the band increased from an annual rate of less than 3% in late 1991 to more than 12% in March 1994.

As was shown in the previous section, the expected depreciation rate implicit in the cetesobono interest rate differential fell from 8% per year when the parity was allowed to fluctuate within the band, to 4% in late February 1992, and then increased steadily up to 14% in August 1992. Regarding the excess expected depreciation, which as we argued provides a more accurate measure of the degree of policy credibility, the annual rate fell from more than 4% in late 1991 to virtually zero in late February 1992 and then increased up to 10% by August 1992.

The sequence suggests that the introduction of a new strategy of exchange rate management had an immediate positive impact on policy credibility. During most of 1992, however, there was a strong erosion in investor sentiment regarding the sustainability of the exchange rate policy. The source of this erosion is not immediately clear. One clue comes from the behavior of the interest differentials afterwards. In particular, in August 1992 President Salinas announced the conclusion of NAFTA negotiations with the U.S. and Canada, and in December of that year the agreement was signed. After these announcements, there was a change in the behavior of expectations, and in particular the excess expected depreciation rate entered a period of steady fall. Thus by mid 1993 there was full policy credibility.

Before the assassination of presidential candidate Colosio in March 1993, expected depreciation was about 4% and excess expected depreciation was *minus* 8%. This trend may have been reinforced by the initiative to grant full autonomy to the Banco de México, sent to Congress by President Salinas in May 1993, by the U.S. Senate ratification of NAFTA in November of that year, and by the announcement by President Salinas that joining the OECD was being seriously considered (January 1994) (figures 9 and 10).

The relevance of the free trade agreement for market sentiment is evidenced by the behavior of the interest rate differentials just before the ratification. As doubts about the result of the Senate vote heightened, the expected depreciation rate jumped up by 2 points in a matter of days,

while simultaneously the exchange rate increased above the band's central parity for the first time in nearly one year. As a result, the excess expected depreciation increased by nearly 5 points. These changes were quickly reversed after the U.S. Senate vote, and the rate of excess expected depreciation fell from 2 to *minus* 4%. This clearly shows the importance investors attached to NAFTA, and thus it suggests that the erosion in policy credibility during most of 1992 may have been related to doubts about the final result of the ongoing free trade negotiations, doubts which were dispelled in August of that year. At the time (i.e., immediately after the ratification), observing the behavior of domestic financial markets, a similar view was expressed by analysts at Banco Nacional de México (Banamex) --one of the two largest banks in the country-- in their monthly analysis of the evolution of the Mexican economy (Banamex, January 1994).

The positive trend in policy credibility was interrupted by the Colosio murder of March 1994. Immediately, the exchange rate shifted to the band ceiling --which produced a reduction in the maximum depreciation allowable within the band, from more than 12% to less than 5% in annual terms--, while the cete-tesobono differential moved from about 3% to more than 10%. As a result of both changes, the excess expected depreciation shifted from *minus* 8% to a 6% peak (i.e., a 14 point shift in a matter of weeks). The effect of the Colosio shock is also shown by the interest rate differential between tesobonos and U.S. Treasury bills; this differential, which can be interpreted as an indicator of the country risk premium, increased from an average of less than 2% in March to about 3.5% two months later (figure 6).{12}

In the months following Colosio's assassination, interest rate differentials remained high. The presidential elections of August 1994 became a turning point. Immediately after the victory of the ruling party's new candidate, Ernesto Zedillo, was known, the cete-tesobono differential fell from 10% to 6%; in addition, the exchange rate appreciated toward the band's central parity; as a result, excess expected depreciation declined, reaching for moments a zero level, and in

general it remained well below the high values observed in the wake of March's shock. Thus it appears that the election results reassured market participants of the continuation of the economic policies followed by the Salinas administration, which resulted in a lessening of devaluation expectations. It is finally interesting to note that the country risk premium began declining well before the presidential election. In June, the premium was already less than 3%, down from its 3.5% May peak. There was as well, however, a discernible effect from the election results. In particular, the average tesobono-U.S. treasury bill differential for August declined to 2%, a level which persisted until the peso devaluation of December (figure 6).{13}

It may be of interest to note that prevailing views in the banking sector were very similar to those of the Executive and the central bank. For instance, according to analyses by the staff of Banamex, the long-term outlook for the Mexican economy was strong because of the government's program of structural reform and fiscal adjustment, which was not altered by Colosio's assassination. Moreover, they fully shared the view that there was no need of a revision in exchange rate policy since there was no evidence of currency misalignment. Quite to the contrary: there was sustained growth in labor productivity and exports, and the current account deficit --instead of being the result of fiscal imbalances as has been in the past-- was a reflection of enhanced business opportunities in the country which were attracting large amounts of foreign investment (Banamex May 1994, June 1994). This was a position kept right up to December 1994 (Banamex November 1994, December 1994).

A new stage was opened by the peso devaluation of 20 December 1994. We already discussed that despite the fact the Mexican economy had a problem of real currency over-valuation, the devaluation announcement produced a markedly negative market reaction: the reserve drain at the central bank accelerated and the country risk premium increased by 3 points in two weeks. After Banco de México withdrew from the foreign exchange market and the peso began to float, there was strong currency depreciation together with steeply rising peso interest rates. As we

have argued, the evidence suggests that these events were not related to the parity change itself, but to a sudden perception of high political risk due to the possibility of the government defaulting on its dollar-linked tesobono debt. It may therefore be revealing of the way private expectations in the financial sector are formed to note that, before the devaluation, the introduction of tesobonos was regarded by some as positive. For instance, again focusing on analyses by the staff of Banamex, it was noted that the substitution of cetes by tesobonos was a means of protecting international reserves, putting downward pressure on peso interest rates and reducing the fiscal cost of government debt. There is not a single mention of the potential risks involved in issuing indexed debt (Banamex, September 1994).

By mid March 1995 the foreign exchange market was already in calm, while the cete interest rate peaked (at an average of 75%) in April. The process of market reassurance involved two steps: the elimination of concerns about the possibility of adoption of capital controls, which could be forced on the Mexican authorities by the maturing of dollar-indexed tesobonos in a context of very low dollar reserves; and the introduction of a highly restrictive macroeconomic policy package. The sequence was as follows. As just mentioned, the initial period of floating witnessed a steep peso depreciation in the midst of a financial panic; on January 30 the exchange rate closed at a record-high level of 6.2 pesos per dollar. An initial attempt at calming down the markets by means of the AUSEE had failed; it seems likely that this happened, at least in part, because of existing doubts about whether the U.S. Congress would approve a \$18 billion financial package for Mexico. A break came with the U.S. government announcement, on January 31, of a \$50 billion package of debt guarantees that effectively removed concerns about the possibility of default on tesobonos. Notably, in the course of that very same day, the exchange parity recovered to 5.7 pesos.

The relief was temporary, however, and within a month heavy speculation resumed. In the first nine days of March, as anticipations of a new economic program were being shaped, the parity

depreciated nearly 30%, closing at 7.3 pesos per dollar. The Mexican government then announced a severely restrictive macroeconomic program for the remaining of 1995 (the PARAUSEE).

The changing outlook and policy restrictions for 1995 as the crisis evolved can be clearly appreciated in the following figures: the original Policy Criteria for 1995 considered a 4% GDP growth rate and a 5.4% inflation rate; in contrast, the respective figures in the AUSEE were 1.5% and 16%, and in the PARAUSEE *minus* 2% and 30%. The goal was to reduce the current account deficit from 7.9% of GDP in 1994 to 9.4% in 1995 in the original Criteria, to 4.2% in the AUSEE and to 0.9% in the PARAUSEE. This would be accomplished by (a) a rise in the primary fiscal surplus from 2.3% of GDP in 1994, to 3.4% in the AUSEE, and finally to 4.4% in the PARAUSEE; and (b) a 10 billion peso ceiling for the increase in central bank domestic credit, which in proportional terms was well below the inflation rate anticipated for the year. The policy announcement immediately lessened the pressure against the peso, and the next day the exchange rate closed at 6.1 pesos.^{14} The average for the week ending the first quarter of 1995 was 6.7. The interesting suggestion is that neither the massive funds supplied by the U.S. government, nor the contractionary macroeconomic program initially announced by the Mexican government were separately enough to stop the panic. Eventually, it took both to stabilize the financial markets.

7. Conclusions

In the early nineties there was a remarkable improvement in investor sentiment regarding Mexico: there was a resurgence of spontaneous capital flows to the country, the terms of funding in the international market became more favorable, and exchange rate policy steadily gained credibility. There is evidence that, at least for a segment of investors, this was the

situation even in the eve of the peso crisis. This attitude was generally shared by the IMF, which consistently praised the Mexican policies.

The trend was started by the introduction of a new stabilization program and the renegotiation of the country's commercial bank debt in the late eighties. Macroeconomic policies during the Salinas government were guided by the goal of reducing domestic inflation to international levels; fiscal consolidation, in particular, played a critical role. Short term stabilization was accompanied by policies of structural reform: trade liberalization, market deregulation, privatization.

In the short run economic performance improved, with rapid disinflation accompanied by output growth resumption. Over time, however, there was an erosion in economic results, characterized by real currency appreciation, rising current account deficits associated with a boom in consumption and bank lending, and falling GDP growth. And yet, optimism among international investors prevailed. This strongly suggests that their views were shaped more by policies (and perhaps by the resulting medium and long term outlook) than by actual economic results (except those concerning inflation). In particular, there was a broad coincidence between the policies followed in Mexico and those recommended by the IMF.

In the end, the prolonged period of exchange rate based disinflation became the direct antecedent of the crisis triggered by the peso devaluation of December 1994: the steady real appreciation of the currency became a factor behind the reserve shocks of late 1994; and the reserve erosion, together with the indexation of domestic debt to the dollar, led to a panic driven by default fears. Eventually, it took both a \$50 billion package of debt guarantees and a severely restrictive macroeconomic program for 1995 to reassure investors and stop the free fall of the peso.

Two additional issues related to the way investors views were shaped before and after the crisis are raised: first, it has been frequently argued that lack of information was a key determinant of the crisis. We have seen, however, that information reflecting the erosion in economic performance caused by the process of real currency appreciation was available, and that in fact there were references to some of its consequences in IMF reports. Lack of information basically reduced to data on the availability of international reserves at the central bank, a variable which was important only for the *timing* of the crisis.

Second, there is the issue of how information regarding fundamentals is interpreted by market participants. Before the crisis, in the midst of euphoria, rising current account deficits, falling GDP growth rates, booming consumption and bank lending levels, all were generally not considered as troublesome. After the devaluation, in contrast, even the moderate external deficit anticipated in the initial emergency program for 1995 was deemed too high, forcing the government to embark on a much stronger contraction.

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Notes

{1} For a collection of papers on the Mexican crisis, see the November 1996 issue of the *Journal of International Economics*, and the supplement 1, 1996 of the *Open Economies Review*.

{2} Basic guidelines were set up in the so-called National Program of Industrial Modernization and Foreign Trade 1990-1994 (January 1990).

{3} In the final years of the eighties there was as well an emphasis on the need to renegotiate the country's external debt to promote domestic economic growth. For instance, in the Policy Criteria for 1989 (late 1988), it was stressed that debt renegotiation was a necessary condition for growth resumption, in that it would allow a reduction in the transfer of resources abroad over a long horizon. The point had been made in the text of a loan agreement with the IMF in April 1988 and again by Secretary of the Treasury Pedro Aspe at the XXX Annual Meeting of the Interamerican Development Bank (March 1989).

{4} For a general discussion on this point, see Corden (1994), chapter 6, and more recently Edwards (1999).

{5} Recall from section I, though, that despite the growth of labor productivity registered during the period, there was in fact a steady rise in dollar labor costs in the Mexican industry.

{6} Note, however, that the dramatic change in the currency composition of domestic debt after March 1994 (from cetes to tesobonos) has the implication that, even before the second speculative attack against the peso took place, the foreign exchange market was not in equilibrium at the prevailing interest and exchange rate levels.

{7} Our previous analysis suggests, however, that factor (c) was not a determinant of the panic.

{8} See again, however, footnotes 5 and 6.

{9} Given this assessment of the situation, the eventual deceleration of economic growth in Mexico must have been an unexpected result for IMF analysts: for instance, with an actual GDP growth rate of 0.6% for 1993, the May and October 1993 Outlooks presented forecasts of 3 and 2.5%, respectively (tables 3 and 4, respectively).

{10} On the other side, in the October 1994 World Economic Outlook it was claimed that in those countries where capital inflows had responded mainly to programs of fiscal adjustment and structural reform, "a tendency for the real exchange rate to appreciate is more likely to be an equilibrium response to improvements in productivity and profitability, especially in the traded-goods sector" (p. 57). This is a standard prediction from the so-called dependent economy model (see, for example, Dornbusch 1974).

{11} Edwards (1997), p. 5, argues that a similar ambiguity can be found in World Bank reports.

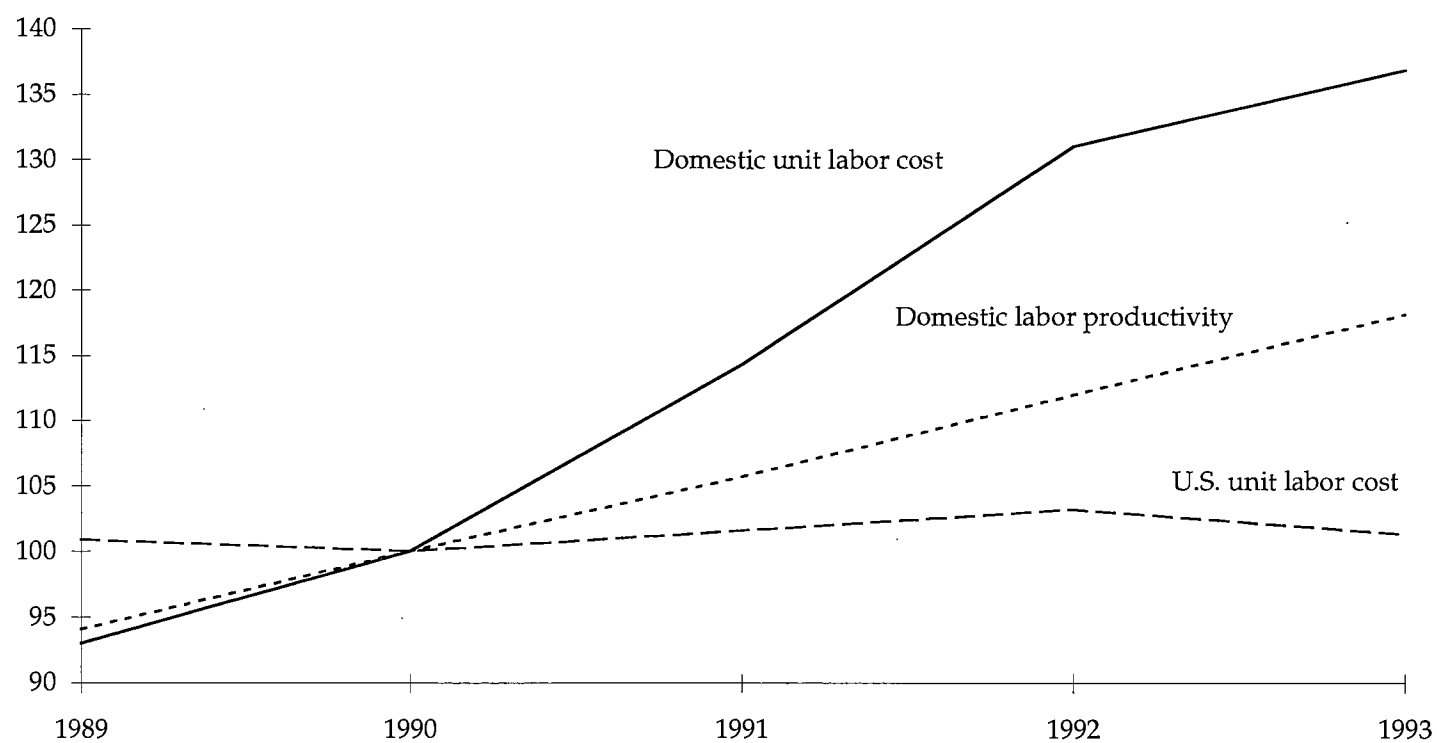
{12} Perhaps surprisingly, there is little evidence that the peasant uprising in the southern state of Chiapas, on 1 January 1994, had any significant effect on investor sentiment: international reserves continued their upward trend, only interrupted by Colosio's assassination (figure 5), the country's political risk premium declined (figure 6), and the expected depreciation rate began rising only after the murder (figure 9). The only sign of stress between January and April was a shift of the exchange rate toward the band's strong half in

early March, which resulted in a reduction of the maximum depreciation rate (figure 9) and hence in the excess expected depreciation (figure 10).

{13} Analysts in the financial sector had early on expressed their optimistic view that the permanence of the orientation of economic policies --especially of exchange rate policy-- was ensured, well before the elections, by the pact renewal of September 1994 (see Banamex, October 1994).

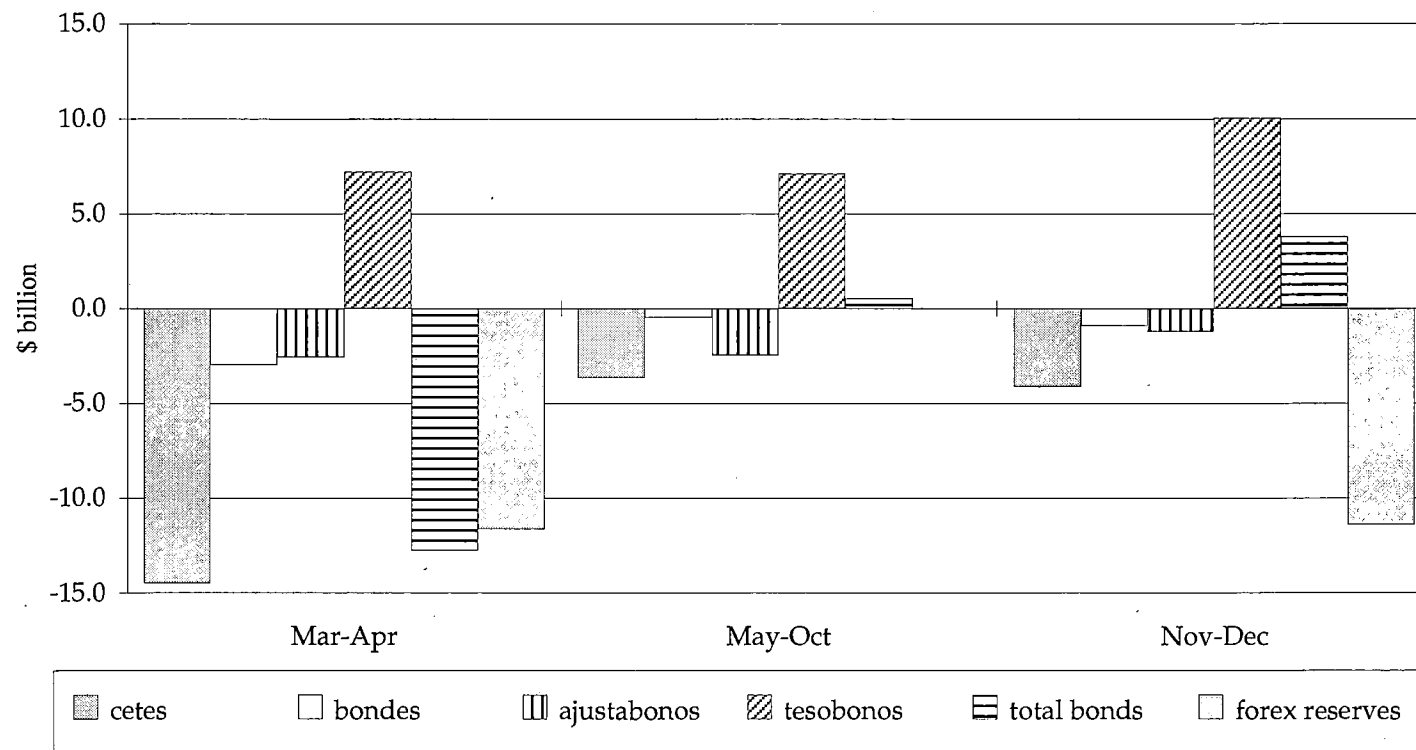
{14} The view that the policy priority after the devaluation had to be the control of inflation had been strongly put forward by analysts in the financial sector. See, e.g., Banamex, January-February 1995.

Figure 1. Unit labor cost and labor productivity in the manufactures, 1989-1993.



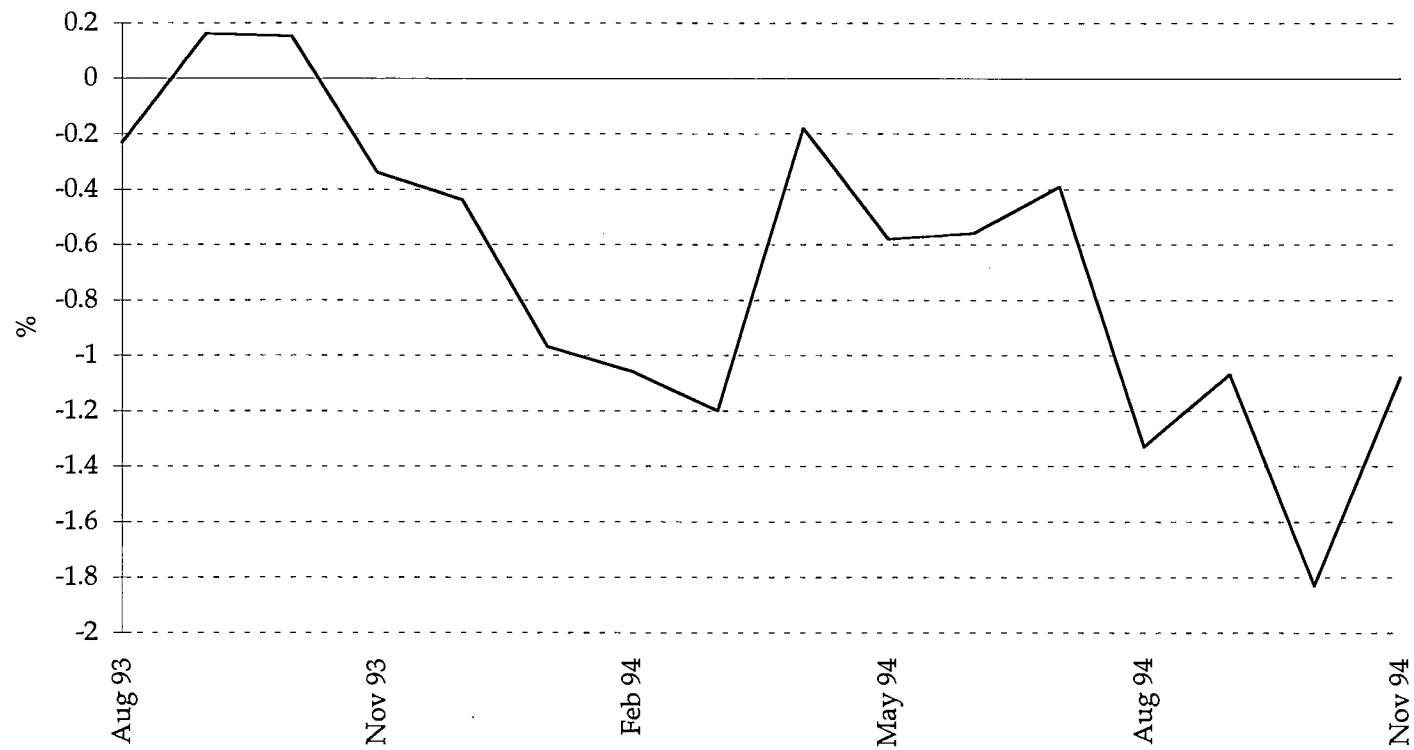
Indexes: 1990=100. Unit costs expressed in U.S. dollars. The figure for 1993 is the average for January-September. Source: INEGI.

Figure 2. Major portfolio shifts, 1994.



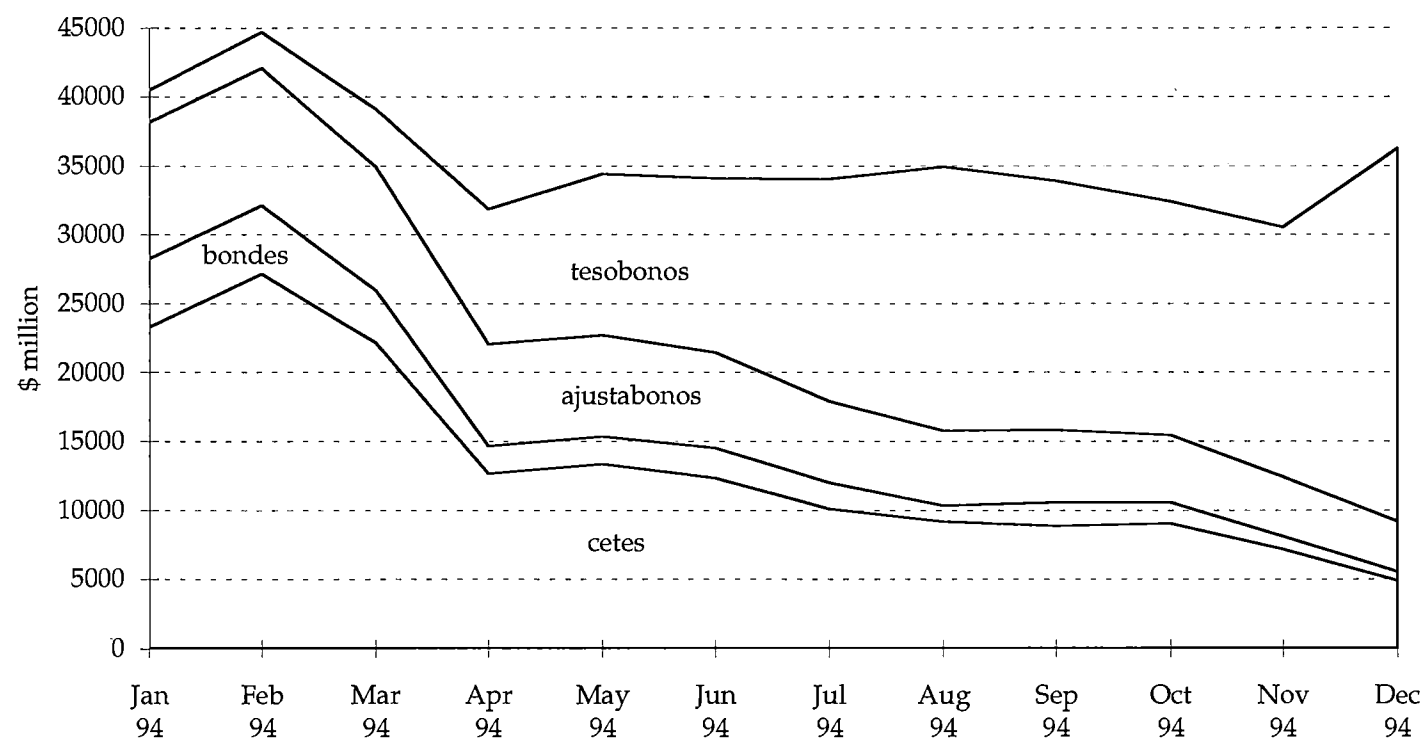
Debt originally in pesos, converted to U.S. dollars at the monthly average interbank exchange rate. Source: Mexican Treasury and Banco de México.

Figure 3. Ajustabono-tesobono interest rate differential, August 1993 - November 1994.



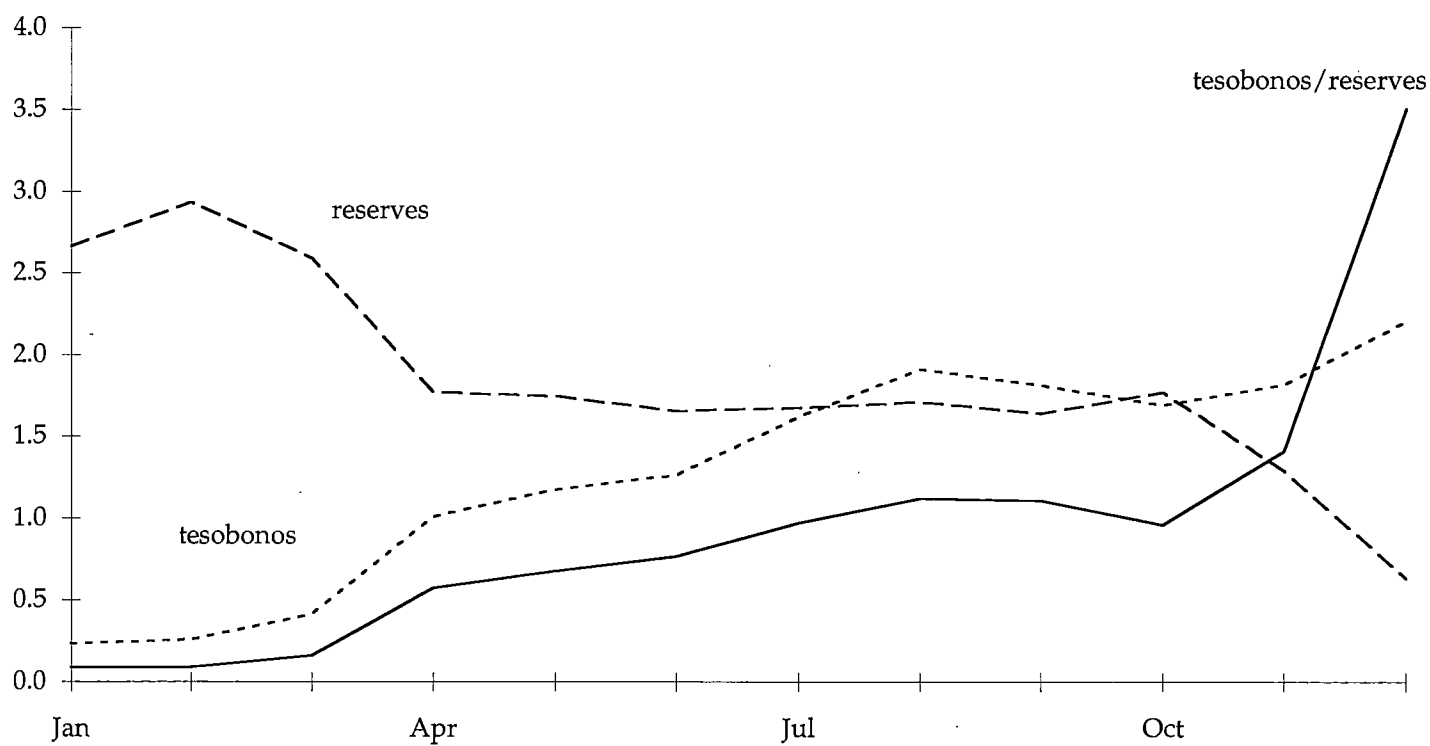
Based on annualized 1092-day ajustabono and 182-day tesobono rates. Monthly averages. Source: Banco de México.

Figure 4. Private holdings of domestic public debt, 1994.



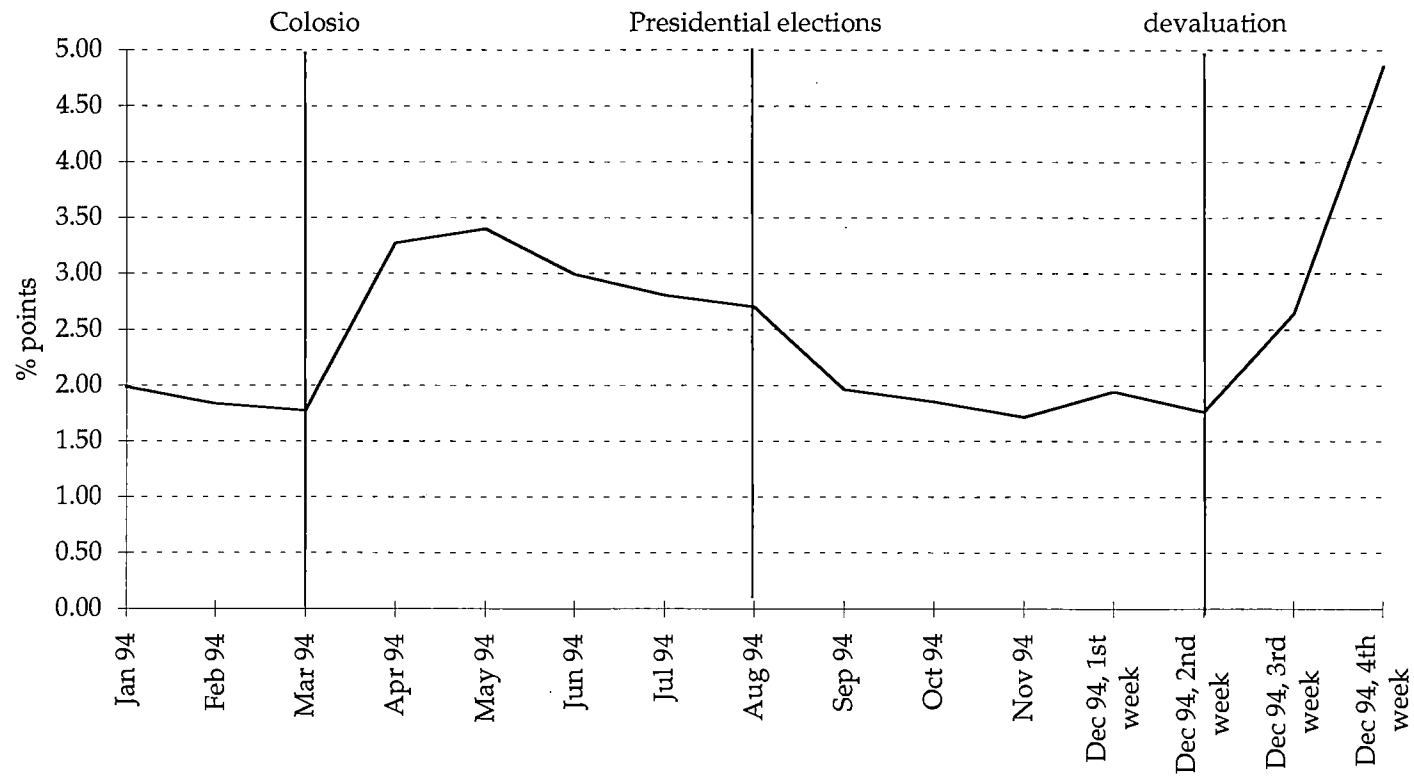
End of month figures. Source: Mexican Treasury.

Figure 5. Private tesobono holdings and international reserves, 1994.



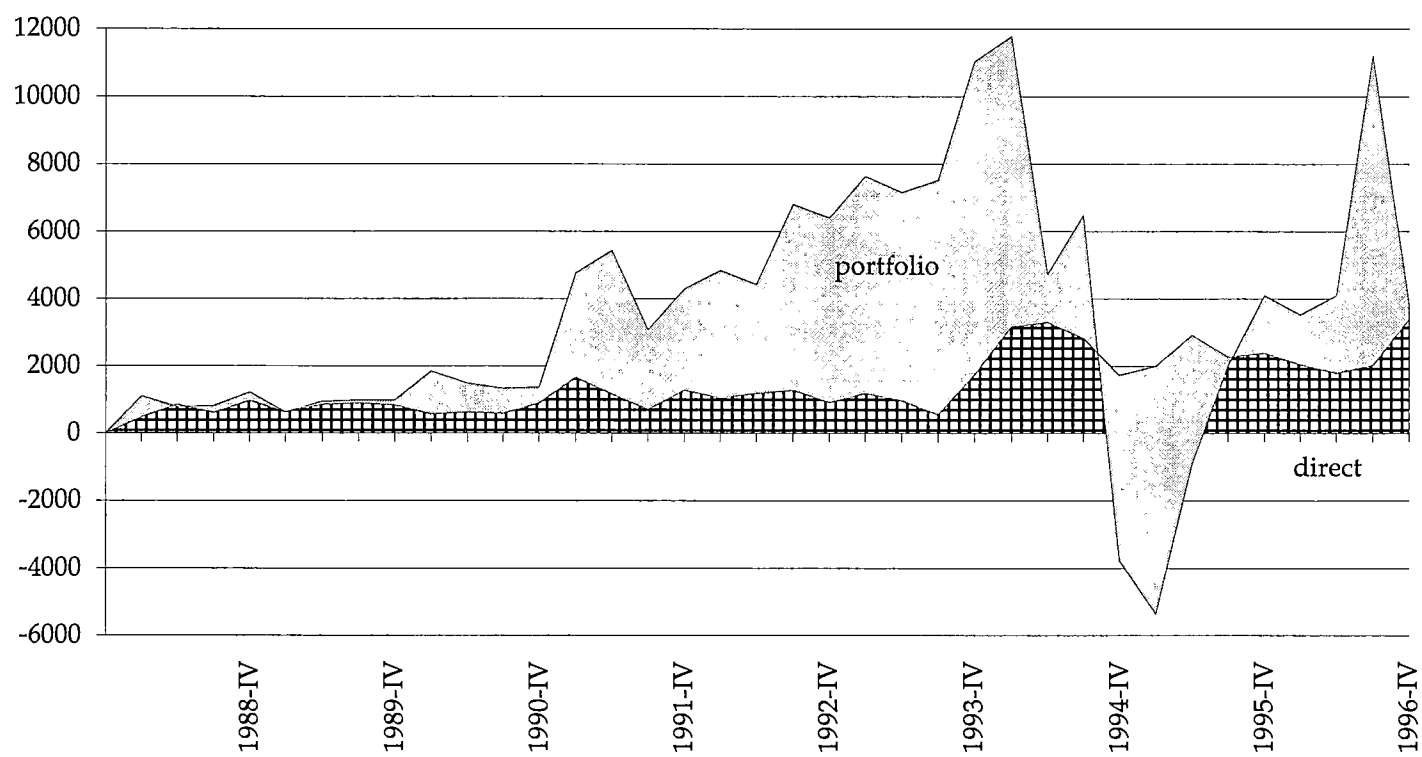
Stocks in \$10 billion, corresponding to end of month figures. Tesobono holdings originally in pesos, converted to U.S. dollars at the end of month interbank exchange rate. Source: Mexican Treasury and Banco de México.

Figure 6. Political risk premium, 1994.



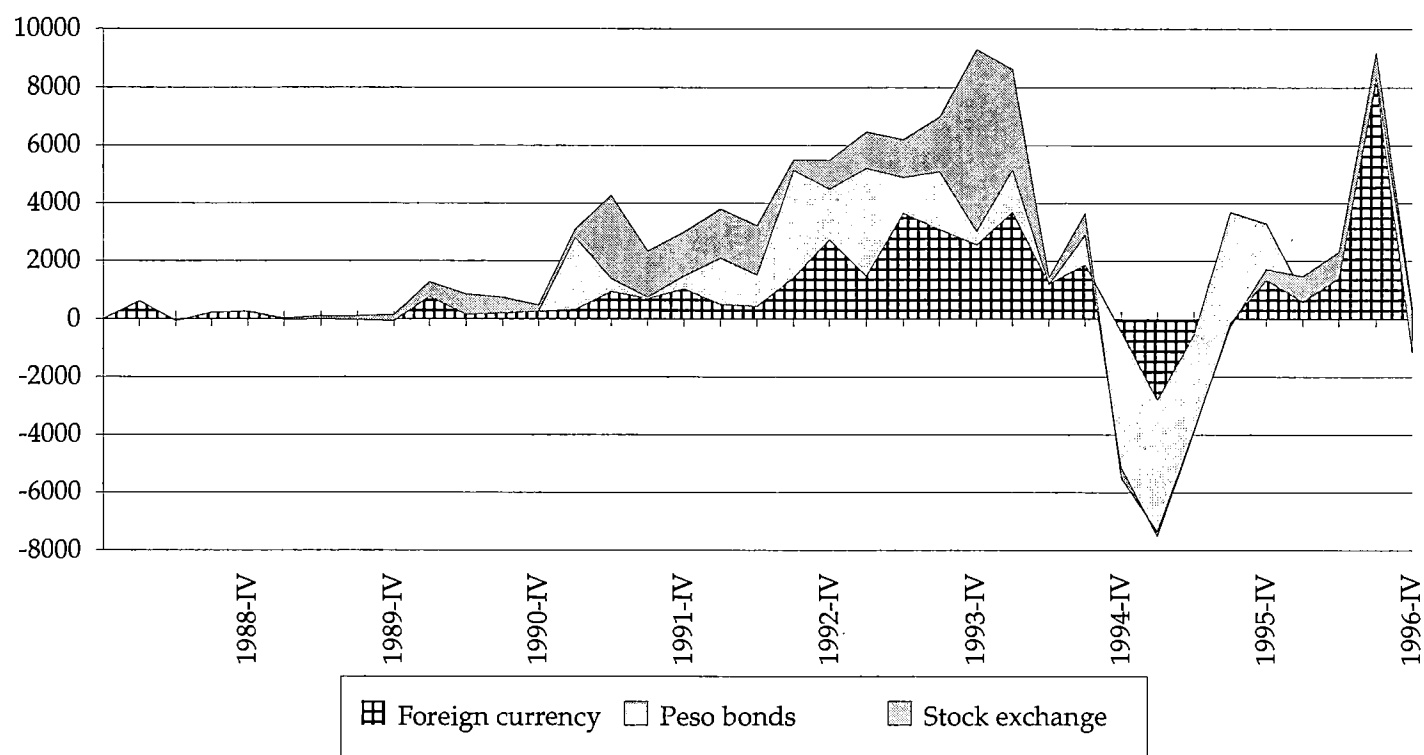
Estimated as the annualized interest rate differential between 3-month tesobonos and U.S. treasury bills (monthly average; except for December, which is based on weekly tesobono rates). Source: Banco de México and IMF IFS.

Figure 7. Foreign investment in Mexico, 1988-96 (USD millions).



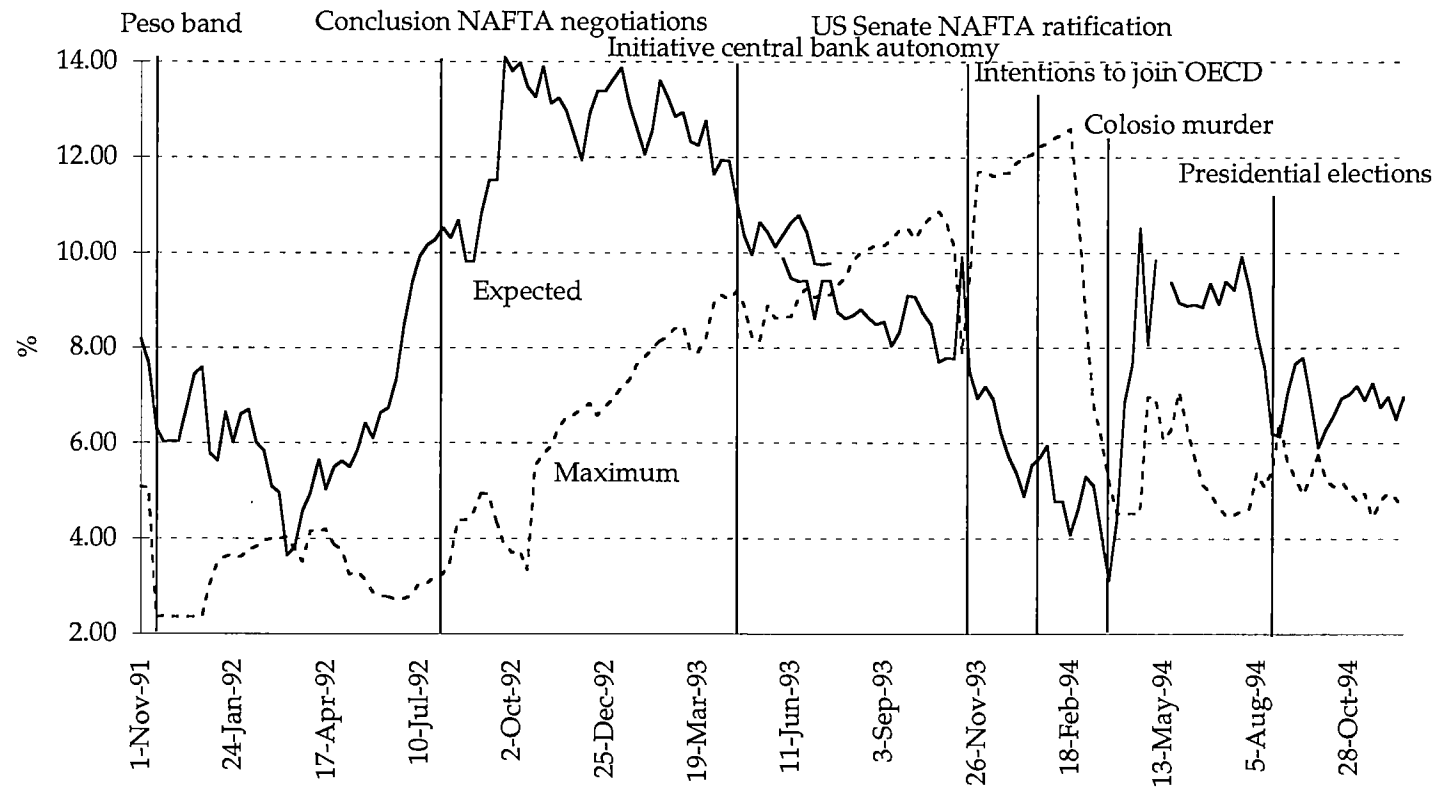
Source: INEGI.

Figure 8. Foreign portfolio investment in Mexico, 1988-96 (USD millions).



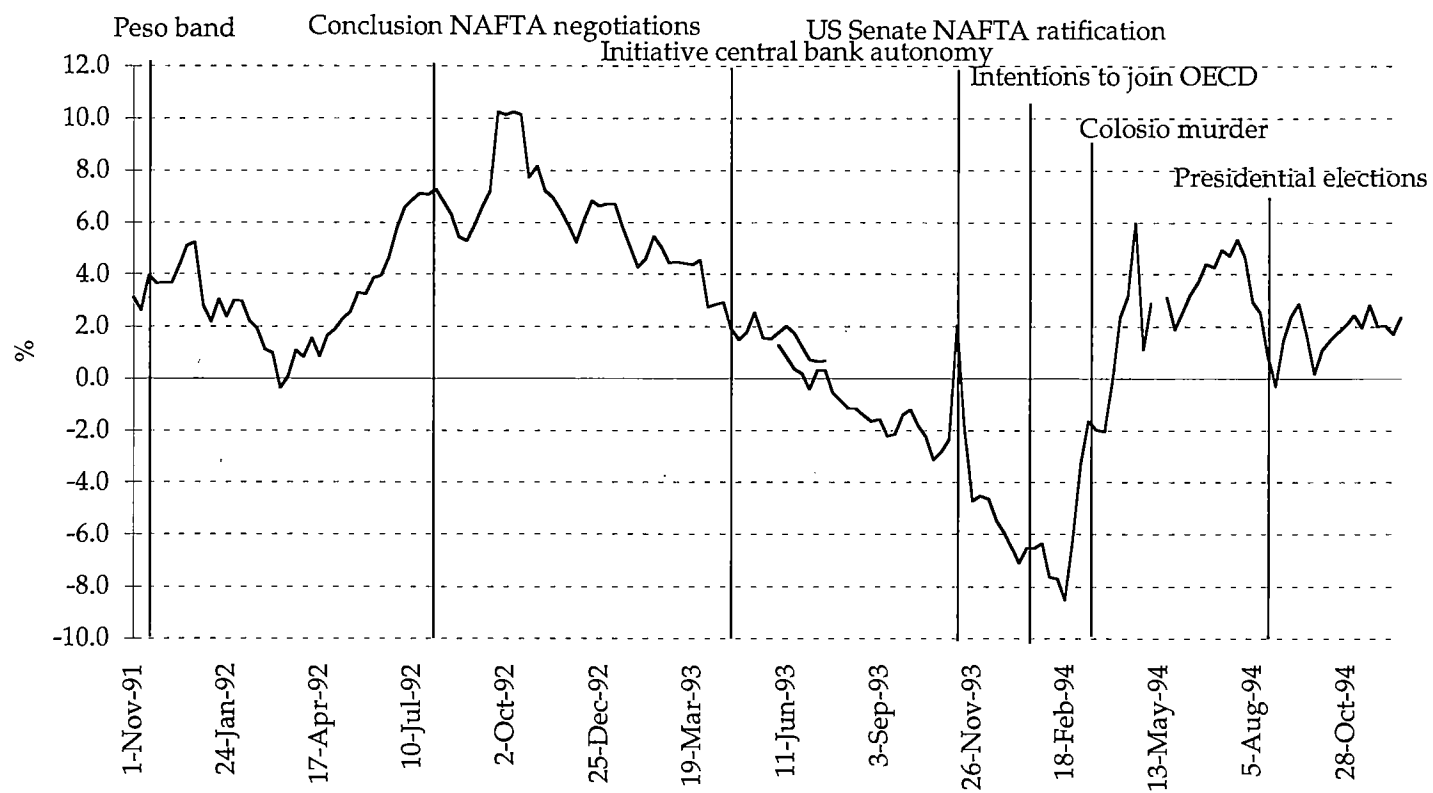
Source: INEGI.

Figure 9. Expected and maximum depreciation rates, November 1991 - December 1994.



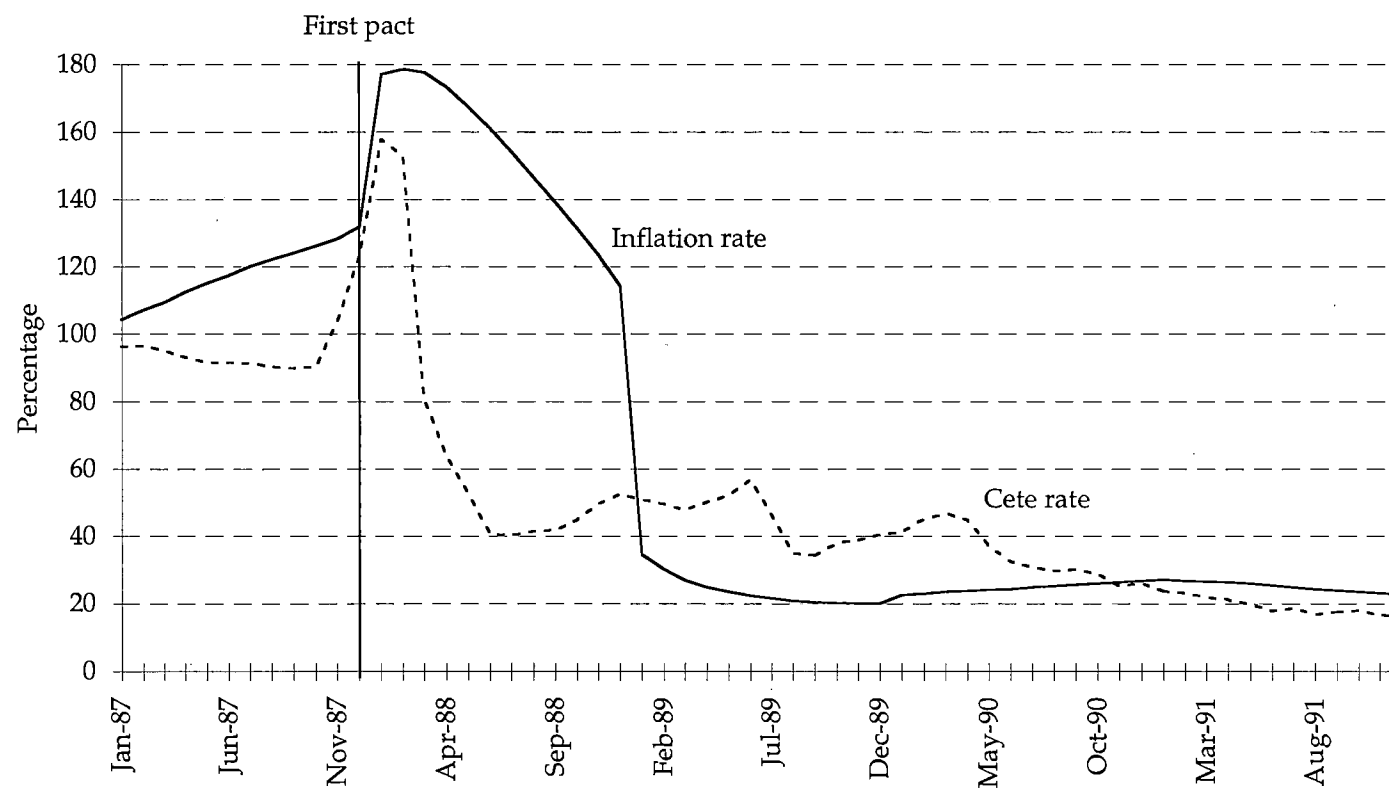
Weekly series; ends on 16 December 1994. Source: Banco de México.

Figure 10. Excess expected depreciation rate, November 1991 - December 1994.



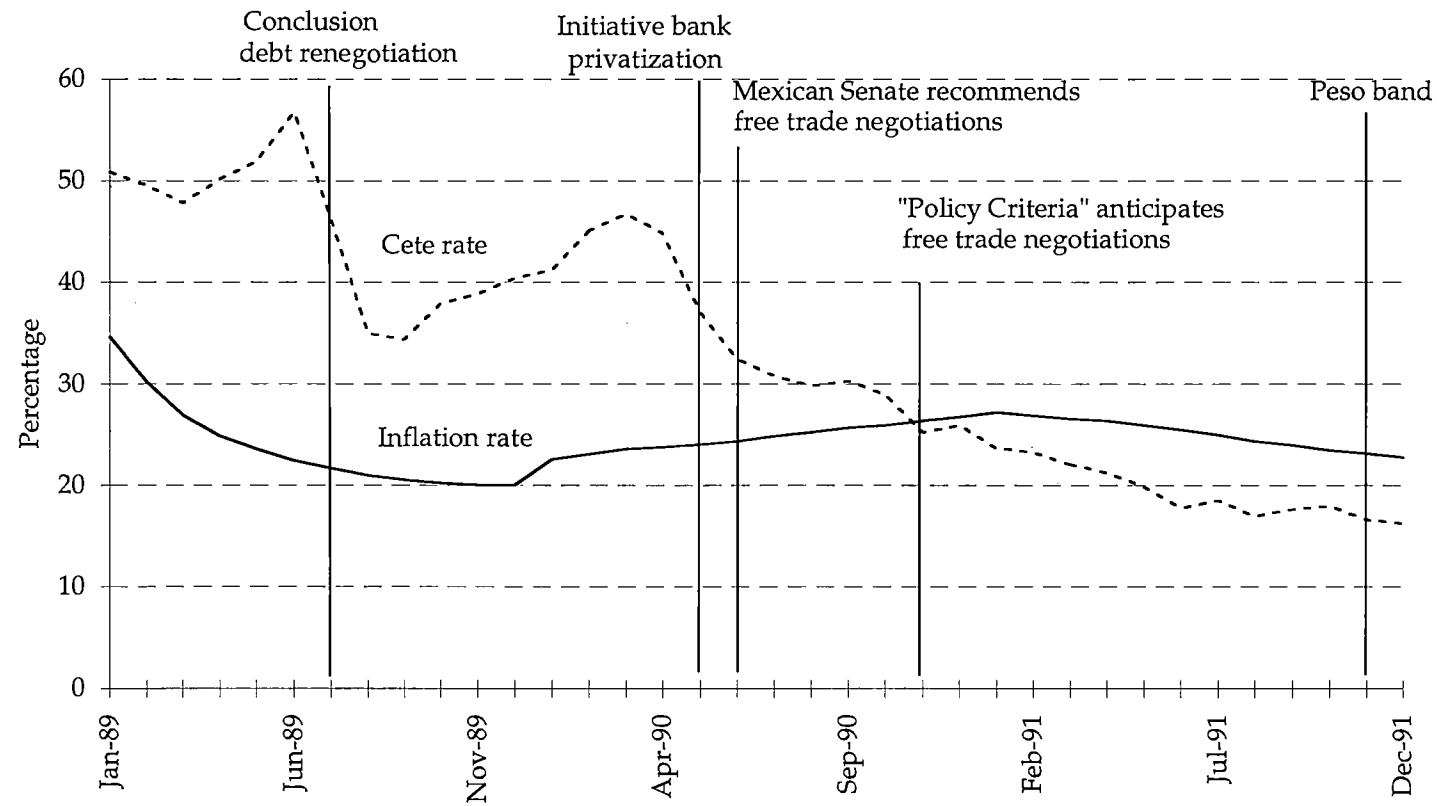
Weekly series; ends on 16 December 1994. Source: Banco de México.

Figure 11. Inflation and interest rates, January 1987 - December 1991.



Monthly series. Inflation is the CPI average annualized variation. The interest rate corresponds to the annualized 28-day cete rate. Source: BD INEGI.

Figure 12. Inflation and interest rates, January 1989 - December 1991.



Monthly series. Inflation is the CPI average annualized variation. The interest rate corresponds to the annualized 28-day cete rate. Source: BD INEGI.